# MONTANA DEPARTMENT OF TRANSPORTATION WETLAND MITIGATION MONITORING REPORT: YEAR 2001

Big Spring Creek Lewistown, Montana



Prepared for:

MONTANA DEPARTMENT OF TRANSPORTATION
2701 Prospect Avenue
Helena, MT 59620-1001

Prepared by: LAND & WATER CONSULTING, INC. P.O. Box 8254
Missoula, MT 59807

July 2002

Project No: 130091.029



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# TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	METHODS	3
	2.1 Monitoring Dates and Activities	3
	2.2 Hydrology	3
	2.3 Vegetation	4
	2.4 Soils	4
	2.5 Wetland Delineation	5
	2.6 Mammals, Reptiles, and Amphibians	5
	2.7 Birds	5
	2.8 Macroinvertebrates	5
	2.9 Functional Assessment	5
	2.10 Photographs	6
	2.11 GPS Data	6
	2.12 Maintenance Needs	6
3.0	RESULTS	6
	3.1 Hydrology	6
	3.2 Vegetation	7
	3.3 Soils	9
	3.4 Wetland Delineation	10
	3.5 Wildlife and Fish	10
	3.6 Macroinvertebrates	11
	3.7 Functional Assessment	11
	3.8 Photographs	12
	3.9 Maintenance Needs/Recommendations	12
	3.10 Current Credit Summary	13
4.0	REFERENCES	14



#### **TABLES**

Table 1	2001 Big Spring Creek Vegetation Species List
Table 2	2001 Observed Mortality of Planted Woody Species
Table 3	Fish and Wildlife Species Observed on the Big Spring Creek Mitigation Site
Table 4	Summary of 2001 Wetland Function/Value Ratings and Functional Points at the
	Big Spring Creek Mitigation Project

#### **FIGURES**

Figure 1 Project Site Location Map

#### **APPENDICES**

Appendix A: Figures 2 & 3

Appendix B: Completed 2001 Wetland Mitigation Site Monitoring Form

Completed 2001 Bird Survey Forms

Completed 2001 Wetland Delineation Forms

Completed 2001 Field and Full Functional Assessment Forms

Macroinvertebrate Sampling Data

Appendix C: Representative Photographs

Appendix D: Conceptual Site Layout

Completed Pre-Project Functional Assessment Form

Appendix E: Bird Survey Protocol

Macroinvertebrate Sampling Protocol

GPS Protocol



#### 1.0 INTRODUCTION

In 1996, the Montana Fish, Wildlife & Parks (FWP) approached the Montana Department of Transportation (MDT) with a partnership proposal to restore approximately 0.5 mile of Big Spring Creek, at the FWP Brewery Flats Fishing Access site, 1 mile SE of Lewistown in Fergus County (**Figure 1**). Big Spring Creek was straightened through the Brewery Flats area around 1907 by the Milwaukee Railroad to facilitate the construction of a freight yard to the west of the creek. FWP proposed, through their Future Fisheries Improvement Program (FFIP), to restore that section of Big Spring Creek that traversed Brewery Flats to a more natural condition for the purpose of improving fisheries habitat. In addition to increasing total stream length from 2,300 feet to 4,000 feet, the design also included the establishment of a functional floodplain and associated wetland habitat.

In 1998, an MOA between MDT and FWP was signed by the agencies, thus formalizing a cooperative agreement to restore Big Spring Creek. In return for a cash contribution to the project, MDT would receive 7.21 acres of Corps of Engineers (COE)-approved wetland mitigation credit to provide mitigation for projected wetland impacts resulting from MDT projects in Watershed #9 (Middle Missouri River).

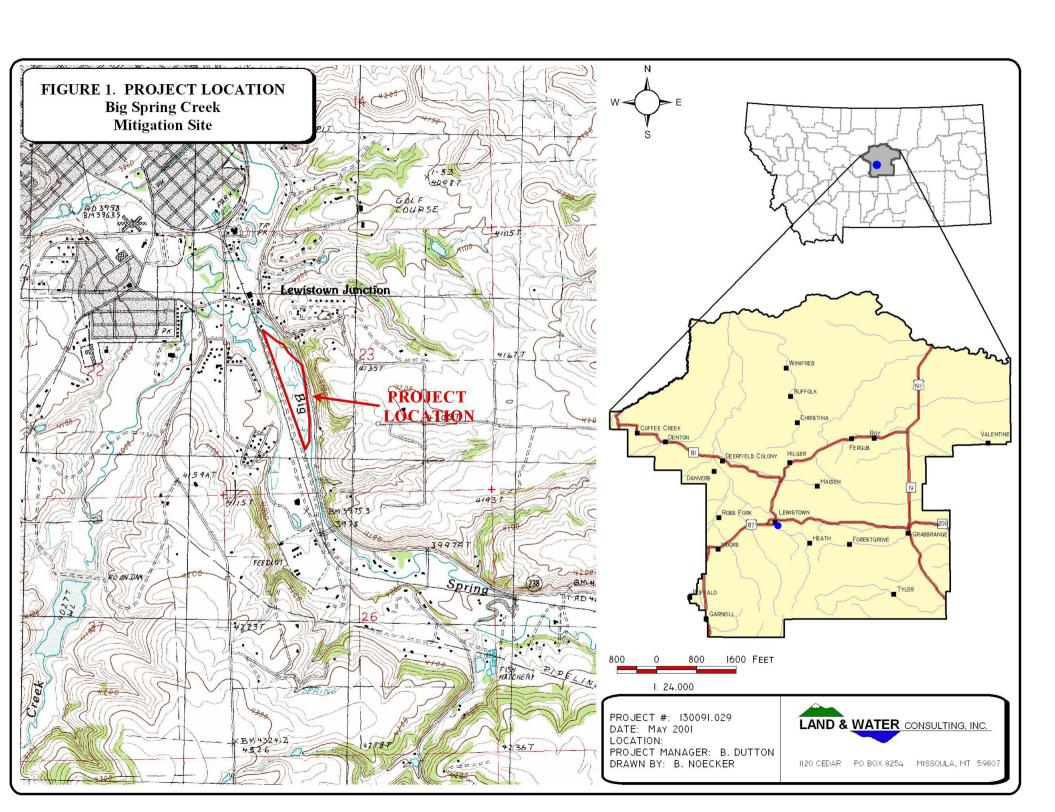
The proposed channel restoration was completed over two construction seasons (1998 & 1999), providing a newly created meandering channel with numerous pool, riffle, and run sections. The project incorporated the use of root wads, boulders, footer logs, sod mats, willow clumps and cuttings, coir fabric and seeding of both upland and wetland areas. Sections of floodplain were lowered 1-2 feet to provide areas for wetland development.

According to baseline wetland delineation maps (Barnum and Hoffer 1997) and aerial photographs provided in the environmental assessment prepared for the project by FWP, approximately 7.86 acres of shrub/scrub and emergent wetland occurred within the current monitoring area prior to project implementation (note: reference to a FWS/NRCS delineation resulting in over 14 acres of pre-existing wetlands was found in the project files, but no evidence of such a delineation was found in MDT, NRCS, or FWP project files, and pre-project aerial photographs do not support a 14-acre delineation within the current monitoring area). Hydrology for many of the existing wetlands was thought to be provided by leaking water pipes, with little or no connection to the incised Big Spring Creek channel. The proposed stream restoration was intended to create approximately 1.5 acres of additional wetland habitat, and restore and enhance existing wetlands by reconnecting them with Big Spring Creek.

Target wetland communities to be produced at the site included shallow marsh/wet meadow and wet meadow/scrub-shrub (Inter-Fluve, Inc. 1998). Target wetland functions to be provided at the site included habitat diversity, flood control & storage, threatened/endangered species habitat, general wildlife habitat, sediment filtration, shoreline stabilization, food chain support, nutrient cycling, and uniqueness (Inter-Fluve, Inc. 1998).

As originally proposed by FWP, the newly created channel was not immediately activated following construction, but was given approximately one year to establish streamside vegetation for stabilization purposes. Water was turned into the new channel in the fall of 2000.





As the site is relatively new, MDT to-date has conducted no formal monitoring. This site will be monitored two times per year over the 3-year contract period to document wetland and other biological attributes. The area to be monitored is illustrated in **Figure 2** (**Appendix A**).

No performance standards or success criteria were required by the COE or other agencies. The COE determined that the maximum allowable credit at the site is 7.21 acres (Rabbe 1998). This conclusion was subjectively based on acreages of existing and developed wetlands, changes in functions and values, re-creation of a functioning floodplain, and modifications to supporting hydrology (Rabbe 1998). It was COE's opinion that the proposed project, while improving the existing setting, would not result in doubling of actual wetland acreage but could essentially double wetland values while establishing "natural" supporting hydrology for the whole complex (Rabbe 1998).

#### 2.0 METHODS

#### 2.1 Monitoring Dates and Activities

The site was visited on May 29th (spring) and August 29<sup>th</sup> (mid-season) 2001. The primary purpose of the spring visit was to conduct a bird/general wildlife reconnaissance. The late-May period was selected for the spring visit because monitoring between mid-May and early June is likely to detect migrant as well as early nesting activities for a variety of avian species (Carlson pers. comm.), as well as maximizing the potential for amphibian detection. In Montana, most amphibian larval stages are present by early June (Werner pers. comm.).

The mid-season visit was conducted to document vegetation, soil, and hydrologic conditions used to map jurisdictional wetlands. All information contained on the Wetland Mitigation Site Monitoring Form (**Appendix B**) was collected at this time. Activities and information conducted/collected included: wetland delineation; wetland/open water boundary mapping; vegetation community mapping; vegetation transects; soils data; hydrology data; bird and general wildlife use; photograph points; macroinvertebrate sampling; GPS data points; functional assessment; and examination of stream habitat conditions including bank stability, fisheries habitat and survival of planted woody vegetation.

#### 2.2 Hydrology

Hydrologic indicators were evaluated at the site during the mid-season visit. Information found in project files indicate that the leaking water pipes on or near the property have been fixed and are no longer contributing to wetland hydrology at the site. The approximate designed channel location is shown on the conceptual restoration plan in **Appendix D**. Wetland hydrology indicators were recorded using procedures outlined in the COE 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Hydrology data were recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**).

All additional hydrologic data were recorded on the mitigation site monitoring form (**Appendix B**). The boundary between wetlands and open water (no rooted vegetation) aquatic habitats was



mapped on the aerial photograph and an estimate of the average water depth at this boundary was recorded.

No groundwater monitoring wells were installed at the site. If located within 18 inches of the ground surface (soil pit depth for purposes of delineation), groundwater depths were documented on the routine wetland delineation data form at each data point.

## 2.3 Vegetation

General dominant species-based vegetation community types (e.g., *Typha latifolia/Scirpus acutus*) were delineated on an aerial photograph during the mid-season visit. Standardized community mapping was not employed as many of these systems are geared towards climax vegetation and may not reflect yearly changes. Estimated percent cover of the dominant species in each community type was listed on the site monitoring form (**Appendix B**).

A 10-foot wide belt transect was established during the mid-season monitoring event to represent the range of current vegetation conditions. Percent cover was estimated for each vegetative species encountered within the "belt" using the following values: +(<1%); 1 (1-5%); 2 (6-10%); 3 (11-20%); 4 (21-50%); and 5 (>50%).

The approximate transect location is shown on **Figure 2** (**Appendix A**). The transect will be used to evaluate changes over time, especially the establishment and increase of hydrophytic vegetation. The transect location was marked on the air photo and all data recorded on the mitigation site monitoring form. Transect endpoint locations were recorded with the GPS unit. Photos of the transect were taken from both ends during the mid-season visit.

A comprehensive plant species list for the site was compiled and will be updated as new species are encountered. Ultimately, observations from past years will be compared with new data to document vegetation changes over time.

Fourteen woody species were planted at this mitigation site. Planting lists are provided in **Appendix D**. No planting map was available; consequently, not all planting locations were known, and it was not possible for observers to inventory all planted species. Rather, observers recorded the number of dead planted species observed and compared them to known planting numbers.

#### 2.4 Soils

Soils were evaluated during the mid-season visit according to hydric soils determination procedures outlined in the COE 1987 Wetland Delineation Manual. Soil data was recorded for each wetland determination point on the COE Routine Wetland Delineation Data Form (**Appendix B**). The most current terminology used by NRCS was used to describe hydric soils (USDA 1998).



#### 2.5 Wetland Delineation

Wetland delineation was conducted within the monitoring area during the mid-season visit according the 1987 COE of Engineers Wetland Delineation Manual. Wetland and upland areas within the monitoring area were investigated for the presence of wetland hydrology, hydrophytic vegetation and hydric soils. The indicator status of vegetation was derived from the National List of Plant Species that occur in Wetlands: Northwest (Region 9) (Reed 1997).

The information was recorded on COE Routine Wetland Delineation Data Forms (**Appendix B**). The wetland/upland boundary was delineated on the air photo and recorded with a resource grade GPS unit. The wetland/upland boundary in combination with the wetland/open water habitat boundary was used to calculate the wetland area developed within the monitoring area.

#### 2.6 Mammals, Reptiles, and Amphibians

Mammal, reptile, and amphibian species observations and other positive indicators of use, such as vocalizations, were recorded on the wetland monitoring form during each visit. Indirect use indicators, including tracks; scat; burrows; eggshells; skins; bones; etc., were also recorded. Observations were recorded as the observer traversed the site while conducting other required activities. Direct sampling methods, such as snap traps, live traps, and pitfall traps, were not implemented. A comprehensive list of observed species was compiled. Observations from past years will ultimately be compared with new data.

#### **2.7** Birds

Bird observations were recorded each visit. No formal census plots, spot mapping, point counts, or strip transects were conducted. During the spring visit, observations were recorded in compliance with the bird survey protocol in **Appendix E**. During the mid-season visit, bird observations were recorded incidental to other monitoring activities. During all visits, observations were categorized by species, activity code, and general habitat association (see field and office data forms, **Appendix B**). Observations from past years will be compared with new data.

#### 2.8 Macroinvertebrates

One macroinvertebrate sample was collected during the mid-season site visit and data recorded on the wetland mitigation monitoring form. Macroinvertebrate sampling procedures are included in **Appendix E**. The approximate location of this sample point, within emergent marsh habitat in the north portion of the site, is shown on **Figure 2**, **Appendix A**. The sample was preserved as outlined in the sampling procedure and sent to a laboratory for analysis.

#### 2.9 Functional Assessment

Functional assessment forms were completed for various assessment areas within the monitoring area using the 1999 MDT Montana Wetland Assessment Method. Field data necessary for this assessment were generally collected during each mid-season site visit. An abbreviated field data



sheet for the 1999 MDT Montana Wetland Assessment Method was compiled to facilitate rapid collection of field information (**Appendix B**). The remainder of the functional assessment was completed in the office.

The pre-project functional assessment of the mitigation site is included in **Appendix D**; however, it should be noted that this baseline functional assessment was completed using the 1997 MDT wetland assessment method. Thus, while pre- and post-project functional assessment results are not directly comparable, general trends can be discussed.

#### 2.10 Photographs

Photographs were taken during the mid-season visit showing the current land use surrounding the site, the upland buffer, the monitored area, macroinvertebrate sampling location, and the vegetation transect. Each photograph point location was recorded with a resource grade GPS. The approximate location of photo points is shown on **Figure 2**, **Appendix A**. All photographs were taken using a 50 mm lens. A description and compass direction for each photograph was recorded on the wetland monitoring form.

#### **2.11 GPS Data**

During the 2001 monitoring season, data were collected with a resource grade GPS unit at the vegetation transect beginning and ending locations, at all photograph locations, and at the macroinvertebrate sampling location. Wetland boundaries were also mapped with a resource grade GPS unit.

#### 2.12 Maintenance Needs

The newly constructed channel was examined for signs of erosion and channel migration. Where encountered, current or future potential problems were documented, photographed and conveyed to MDT.

#### 3.0 RESULTS

#### 3.1 Hydrology

According to the Western Regional Climate Center, Lewistown yearly precipitation totals for 2000 (13.89 inches) and 2001 (12.37 inches) were 76 and 68 percent, respectively, of the total annual mean precipitation (18.28 inches) in this area.

Inundation was present, to some extent, at all wetlands within the monitoring area during the mid-season visit despite the sub-normal precipitation year. Big Spring Creek contained the only "open water" on the site. Water depths at open water/rooted vegetation interfaces along the creek ranged between approximately one to two feet. Open water areas are shown on **Figure 3** (**Appendix A**). Specific recorded values are provided on the attached data forms.



Overall, the site was approximately 30 percent inundated, with an average depth of two to four inches and a range of depths from 0 to an estimated four feet. Deepest areas were located at stream pools.

A groundwater component contributes strongly to this site, likely resulting at least partially from alluvial flow. Groundwater was encountered within about 1 foot of the ground surface at most wetlands. Several groundwater discharge sites occur along the toe of highway fill between the parking area and the northeast corner of the monitoring area. This area is developing very strong wetland characteristics despite attempts to drain this area with small hand dug ditches. According to MDT, wetlands are not desirable in this area, as they may be in conflict with future highway expansion (Urban pers. comm.).

A remnant access road west and south of the creek, south of the parking area appears to be preventing saturation within its footprint, and possibly between the road and the creek to the north. The road, however, is also functioning as a low dike that backs water onto currently upland area to the south.

#### 3.2 Vegetation

Vegetation species identified on the site are presented in **Table 1** and on the attached data form. Three primary wetland community types were identified and mapped on the mitigation area (**Figure 3**, **Appendix A**). These included Type 1: *Agrostis alba*, Type 2: *Typha latifolia*, and Type 3: *Salix*. Dominant species within each of these communities are listed on the attached data form (**Appendix B**). Type 1 occurs commonly and intermittently as narrow fringes along the immediate stream channel. Type 2 occurs within emergent marsh communities throughout the site, and Type 3 occurs primarily in association with streamside areas in the south portion of the site.

Upland communities are primarily dominated by seeded and/or weedy herbaceous species including quackgrass (*Agropyron repens*), bearded wheatgrass (*Agropyron caninum*), intermediate wheatgrass (*Agropyron intermedium*), sowthistle (*Sonchus arvensis*), ragweed (*Ambrosia trifida*), field pennycress (*Thlaspi arvense*) and white sweetclover (*Melilotus alba*). A large "transitional upland" area occurs west of the creek, south of the parking lot, which is exhibiting signs of transitioning from upland to wetland (**Figure 2** in **Appendix A**). Vegetation transect results are detailed in the attached data form, and are summarized graphically below.

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ì	Start	Upland	Type 2 (155')	Tvpe 1	Upland	Tvpe 2	Upland	Tvpe 2	Upland	Total:	End	ı
ı	Sunt	(172)	J	(95')	(972)	(40')	(8')	$(8^{2})$	(82)	4102	2	ı
- 1		(1/)		(93)	(0/1)	(40)	(0)	(0)	(0)	418	e i	

Observed mortality of planted woody vegetation species is summarized below in **Table 2**. As specific planting locations were unknown, only observations of dead, obviously planted individuals were recorded in order to avoid spending available monitoring time searching the site for possible planting areas.



Table 1: 2001 Big Spring Creek Vegetation Species List

Species	Region 9 (Northwest) Wetland Indicator (Applied to This Project)
Achillea millefolium	FACU
Agropyron caninum	FAC-
Agropyron intermedium	
Agropyron repens	FACU
Agrostis alba	FACW
Alopecurus pratensis	FACW
Ambrosia trifida	
Arctium minus	
Aster spp.	
Avena fatua	
Beckmannia syzigachne	OBL
Betula occidentalis	FACW
Bidens cernua	FACW+
Bromus inermis	
Calamagrostis inexpansa	FACW
Carex aquatilis	OBL
Carex nebrascensis	OBL
Carex utriculata	OBL
Cirsium arvense	FAC-
Cornus stolonifera	FACW
Crataegus douglasii	FAC
Dactylis glomerata	
Echinochloa crusgalli	FACW
Eleocharis palustris	OBL
Elodea canadensis	OBL
Epilobium ciliatum	FACW-
Equisetum arvense	FAC
Fraxinus pensylvanica	FAC
Galium aparine	
Glyceria elata	FACW+
Glycyrrhiza lepidota	FAC+
Hordeum jubatum	FAC-
Iva xanthifolia	FAC
Juncus bufonius	FACW+
Juncus ensifolius Juncus nodosus	FACW
	OBL
Juncus torreyi Lactuca serriola	FACW
Lemna minor	FACU
Linaria vulgaris	OBL
Lycopus americanus	
Medicago lupulina	GBL FAC
Melilotus alba	FACU
Melilotus officinalis	T . CT.
Mentha arvensis	FACU FAC
Muhlenbergia minutissima	FAC
Nasturtium officinale	OBL
Phalaris arundinacea	FACW
Phleum pratense	FACW FAC-
Plantago major	FAC+
Poa pratensis	FAC
Polygonum lapathifolium	FACW
Polypogon monspeliensis	FACW
Populus angustifolia	FACW
Populus deltoides	FAC
Populus tremuloides	FAC+
Populus trichocarpa	FAC
Prunus virginiana	FACU
	, 21200



Table 1: 2001 Big Spring Creek Vegetation Species List (continued)

Species	Region 9 (Northwest) Wetland Indicator (Applied to This Project)
Ribes aureum	FAC+
Ranunculus aquatilis	OBL
Rosa woodsii	FACU
Rumex crispus	FACW
Sagittaria cuneata	OBL
Salix amygdaloides	FACW
Salix exigua	OBL
Salix lutea	OBL
Scirpus acutus	OBL
Scirpus microcarpus	OBL
Scirpus pungens	OBL
Shepherdia canadensis	
Sisymbrium altissimum	FACU
Sium suave	OBL
Solidago canadensis	FACU
Sonchus arvensis	FACU+
Taraxacum officinale	FACU
Thlaspi arvense	
Trifolium fragiferum	FACU
Trifolium repens	
Typha latifolia	OBL
Verbascum thapsus	

Table 2: 2001 Observed Mortality of Planted Woody Species

Species	Estimated # Originally Planted	Number Dead Observed	Comments
Salix exigua	up to 3,500 cuttings;	see comments	Willows planted below the ordinary high water mark were generally
Salix amygdaloides	not distinguished by		dead, presumably due to drowning. Willows planted above the OHWM
	species		were generally alive. Estimated overall survival rate of 50 – 60%.
Populus deltoides	21	13	Mortality likely due to drier or wetter than anticipated conditions at
			individual planting locations.
Populus trichocarpa	24	14	Mortality likely due to drier or wetter than anticipated conditions at
			individual planting locations.
Populus angustifolia	30	0	Doing well; many observed.
Populus tremuloides	50	0	No dead observed, but estimated <50 live observed.
Betula occidentalis	31	5	Few dead observed, but estimated <10 live observed. Mortality likely
			due to drought.
Rosa woodsii	10	0	No dead observed, but estimated <5 live observed. Mortality likely due
			to drought / competition with upland grasses.
Cornus stolonifera	130	0	No dead observed, but estimated <50 live observed. Mortality likely due
			to drought / competition with upland grasses, and possibly deer.
Prunus virginiana	150	10	Doing well; numerous observations.
Shepherdia canadensis	30	0	No dead observed, but estimated <20 live observed.
Fraxinus pensylvanica	30	0	Doing well; several observed.
Ribes aureum	35	0	No dead observed, but estimated <10 live observed.
Crataegus douglasii	10	2	Few live or dead observed.

#### 3.3 Soils

According to the Fergus County soil survey (Soil Conservation Service 1988), pre-existing soils at the site were mapped as Fluvaquentic Haplaquolls and Enbar-Nesda loams. Fluvaquentic Haplaquolls are poorly drained soils on flood plains that formed in alluvium. Enbar-Nesda loams are well drained to somewhat poorly drained soils that occur on floodplains and terraces. Oddly, soils descriptions provided in the survey for these two map units seem to apply in the reverse on the ground. The survey describes the upland portions of the site as supporting the wetter Fluvaquentic Haplaquolls, and the wetland portions as supporting drier Enbar-Nesda loams. On the ground, just the opposite seems true. Both of these soils types exhibit a seasonal



9

high water table. Fluvaquentic Haplaquolls are included on the Fergus County hydric soils list (floodplains), while Enbar-Nesda loams are not considered hydric.

Soils sampled in wetland areas were generally comprised of silty clay loams or silt loams with a matrix color of 10YR3/1 without mottles, or 10YR3/2 with distinct mottles in the range of 10YR 4/6, indicating a fluctuating water table. Wetland soils were saturated or inundated at the time of the survey. Soils in the area denoted as "transitional upland" on **Figure 3** (**Appendix A**) west of the creek actually satisfied hydric soils criteria and were saturated during the survey, but vegetation had not yet shifted into a community dominated by hydrophytes.

#### **3.4 Wetland Delineation**

Delineated wetland boundaries are illustrated on **Figure 3**. Completed wetland delineation forms are included in **Appendix B**. Soils, vegetation, and hydrology are discussed in preceding sections. Delineation results are as follows:

Big Spring Creek: 8.35 wetland acres within large polygons and small depressions

0.06 wetland acres along stream margins

2.41 acres open water (non-wetland perennial stream channel)

Based on maps provided in the project EA, approximately 7.86 wetland acres and 1.3 acres of non-wetland perennial stream channel occurred within the monitoring area prior to project implementation. Currently, the site has gained 0.55 wetland acres and 1.31 acres of non-wetland perennial stream channel.

#### 3.5 Wildlife and Fish

Wildlife species, or evidence of wildlife, observed on the site during 2001 monitoring efforts are listed in **Table 3**. Specific evidence observed, as well as activity codes pertaining to birds, are provided on the completed monitoring form in **Appendix B**. Four mammal, one reptile, one amphibian, and 18 bird species were noted using portions of the mitigation site during 2001 monitoring. Rainbow trout (*Oncorhynchus mykiss*) were also observed. The wetland and stream habitat provided on the site, particularly large streamside wetland complexes in the north and south portions of the site, provide quality wildlife habitat for several species. This habitat value is expected to increase as vegetation establishes and diversifies, and as additional wetlands are restored/created. The lone wood duck nesting box located on the site (**see Figure 2**, **Appendix A**) appeared to be inactive during the 2001 nesting season.

Preliminary fish shocking data for the restored reach are encouraging. In 2001, the reach of Big Spring Creek including the restored channel was shocked, and yielded 710 rainbow and brown (*Salmo trutta*) trout over 10 inches in length (MFWP 2002). This compares with pre-project (1995 – 2000) shocking results that averaged 434 trout over 10 inches in length (MFWP 2002) through reaches including the project area.



10

#### 3.6 Macroinvertebrates

Macroinvertebrate sampling results are provided in **Appendix B** and summarized below.

The sample was taken within the emergent marsh complex east of the creek in the north portion of the site. Bioassessment scores suggest sub-optimal conditions at this site. Low midge richness could imply limited benthic habitats. Overall taxa richness suggests that other habitats were amply available; these likely include macrophytes. Taxonomic composition of the assemblage suggests that the sample may have been taken from an outflow environment (the sample was taken at a groundwater discharge site).

Table 3: Fish and Wildlife Species Observed During 2001 on the Big Spring Creek Mitigation Site

#### **FISH**

Rainbow Trout (Oncorhynchus mykiss) su

#### AMPHIBIANS

Western Chorus Frog (Pseudacris triseriata) sp

#### REPTILES

Western Terrestrial Garter Snake (Thamnophis elegans) sp, su

#### **BIRDS**

American Robin (*Turdus migratorius*) sp, su Blue-winged Teal (*Anas discors*) sp Common Snipe (*Gallinago gallinago*) sp Common Yellowthroat (*Geothlypis trichas*) su Eastern Kingbird (*Tyrannus tyrannus*) sp, su Killdeer (*Charadrius vociferous*) sp, su Mallard (*Anas platyrhynchos*) sp Northern Rough-winged Swallow (*Stelgidopteryx serripennis*) sp Red-tailed Hawk (Buteo jamaicensis) su
Red-winged Blackbird (Agelaius phoeniceus) sp
Ring-necked Pheasant (Phasianus colchicus) sp, su
Sandhill Crane (Grus Canadensis) su
Song Sparrow (Melospiza melodia) sp
Sora (Porzana Carolina) su
Spotted Sandpiper (Actitis macularia) sp, su
Tree Swallow (Tachycineta bicolor) sp
Willow Flycatcher (Empidonax traillii) su
Yellow Warbler (Dendroica petechia) sp, su

#### **MAMMALS**

White-tailed Deer (Odocoileus virginianus) sp, su American Beaver (Castor Canadensis) su Eastern Cottontail (Sylvilagus floridanus) su Meadow Vole (Microtus pennsylvanicus) su

#### 3.7 Functional Assessment

Completed functional assessment forms are presented in **Appendix B**. Functional assessment results are summarized in **Table 4**. For comparative purposes, the functional assessment results for baseline conditions prepared by Inter-Fluve are also included in **Table 3**. However, the baseline assessment was performed using a modified 1997 MDT assessment method. Several parameters of this method were substantially revised during development of the 1999 MDT assessment method, which was applied during 2001 monitoring.



For example, baseline fish habitat scored a 1.0 using the 1997 method, and scored a 0.9 post project using the 1999 method due to the addition of several variables for consideration in the updated method. Fish habitat increased dramatically with addition of channel length, substrate improvement, and other features; however, this is not reflected in the comparative functional assessments. Thus, direct comparison of pre- and post-project functions is not possible, although some general trends can be noted. Also, as the baseline assessment was performed using a modified 1997 MDT method, it resulted in an incorrect overall category designation (Category IV). This was corrected to a Category III on **Table 4**.

Large wetland polygons bisected by the stream rated as Category II sites, primarily due to high wildlife and fish habitat, flood attenuation, sediment removal, production export, and recreation/education ratings. Narrow fringes along the creek rated as Category III sites, rating high for groundwater discharge and recreation/education. Isolated depressions rated as Category III sites and scored high for sediment/nutrient removal and groundwater discharge.

Generally speaking, functions that increased substantially over baseline conditions include wildlife and fish habitat, flood attenuation, sediment/nutrient/toxicant removal, production export, and groundwater discharge. The pre-project site provided about 29 functional units within the monitoring area (using the 1997 method), and the post-project site provides about 72 functional units (using the 1999 method), for a conservative gain of at least 43 functional units.

#### 3.8 Photographs

Representative photographs taken from photo-points and transect ends are provided in **Appendix C**.

#### 3.9 Maintenance Needs/Recommendations

All stream banks were in good condition during the spring and mid-season visits. MDT and/or FWP may want to consider removing the previously mentioned access road located southwest of the parking area and south of the creek. If the short access road is no longer needed for maintenance purposes, then removal of the fill may allow for wetland expansion in this area.



12

Table 4: Summary of 2001 Wetland Function/Value Ratings and Functional Points <sup>1</sup> at the Big Spring Creek Mitigation Project

		Wetlan	d Sites	
Function and Value Parameters From the 1999 MDT Montana Wetland Assessment Method	2001: Large Wetland Polygons Bisected by Creek Near North and South Ends of Site	2001: Five Isolated Wetland Depressions West of Creek	2001: Narro w Wetland Fringe Segments along Creek	1998 Baseline Assessment <sup>2</sup>
Listed/Proposed T&E Species Habitat	Low (0.3)	Low (0.0)	Low (0.3)	Low (0.2)
MNHP Species Habitat	Mod (0.6)	Low (0.1)	Low (0.1)	Low (0.0)
General Wildlife Habitat	High (0.9)	Mod (0.5)	Mod (0.7)	Mod (0.5)
General Fish/Aquatic Habitat	High (0.9)	NA	Mod (0.7)	High (1.0)
Flood Attenuation	High (0.7)	Low (0.2)	Low (0.2)	Low (0.3)
Short and Long Term Surface Water Storage	Mod (0.6)	Low (0.3)	Low (0.3)	
Sediment, Nutrient, Toxicant Removal	High (1.0)	High (1.0)	Mod (0.6)	Low (0.1)
Sediment/Shoreline Stabilization	Mod (0.7)	NA	Mod (0.7)	NA
Production Export/Food Chain Support	High (0.9)	Low (0.3)	Mod (0.4)	Low (0.4)
Groundwater Discharge/Recharge	High (1.0)	High (1.0)	High (1.0)	NA
Uniqueness	Low (0.3)	Low (0.3)	Low (0.3)	Low (0.2)
Recreation/Education Potential	High (1.0)	Mod (0.5)	High (1.0)	High (1.0)
Actual Points/Possible Points	8.9 / 12	4.2 / 10	5.3 / 12	3.7 / 10
% of Possible Score Achieved	74%	42%	44%	37%
Overall Category	II	III	III	III³
Total Acreage of Assessed Wetlands within AA Boundaries (note: non-wetland stream channel is not included in these totals)  * Pre-project (baseline) wetland areas within the current monitoring area boundaries were measured via digital planimeter from delineation maps provided in project EA.	7.81 wetland ac	0.54 wetland ac	0.06 wetland ac	7.86 wetland ac.
Functional Units (acreage x actual points)	69.5 fu	2.3 fu	0.3 fu	29.1 fu
Net Acreage Gain	Site currently supports stream channel. Basel included 7.86 wetland gain is approximately stream channel.	ine conditions within the acres and 1.3 acres of 1 to 1.55 wetland acres a	ne current monitoring a non-wetland perennial	area boundaries stream channel. <b>Net</b>
Net Functional Unit Gain <sup>2</sup>	Approximately 43 Fur	nctional Units <sup>2</sup>		

<sup>&</sup>lt;sup>1</sup> See completed MDT functional assessment forms in Appendix B for further detail. <sup>2</sup>The baseline assessment was performed by Inter-Fluve using a modified 1997 MDT assessment method, several parameters which were substantially revised during development of the 1999 MDT assessment method, which was applied during 2001 monitoring. Thus, direct comparison of pre- and post-project functions is not possible, although some general trends can be noted. <sup>3</sup>The baseline assessment was performed using a modified 1997 MDT method, which resulted in an incorrect overall category designation (Category IV). This was corrected to a Category III.

#### 3.10 Current Credit Summary

Approximately 8.41 wetland acres and 2.4 acres of non-wetland perennial stream channel occur within the monitoring area. Based on maps provided in the project EA, approximately 7.86 wetland acres and 1.3 acres of non-wetland perennial stream channel occurred within the monitoring area prior to project implementation. Currently, the site has gained 0.55 wetland acres and 1.31 acres of non-wetland perennial stream channel, substantially improving fish habitat.

The pre-project site provided about 29 functional units within the monitoring area (using the 1997 method), and the post-project site provides about 72 functional units (using the 1999 method), for a conservative gain of at least 43 functional units.



The COE determined that the maximum allowable credit at the site is 7.21 acres (Rabbe 1998). This conclusion was subjectively based on acreages of existing and developed wetlands, changes in functions and values, re-creation of a functioning floodplain, and modifications to supporting hydrology (Rabbe 1998). No performance standards were required by the COE, although the site appears to be well on its way to functioning as anticipated. Consequently, the availability of credit application at this site is currently unknown.

## 4.0 REFERENCES

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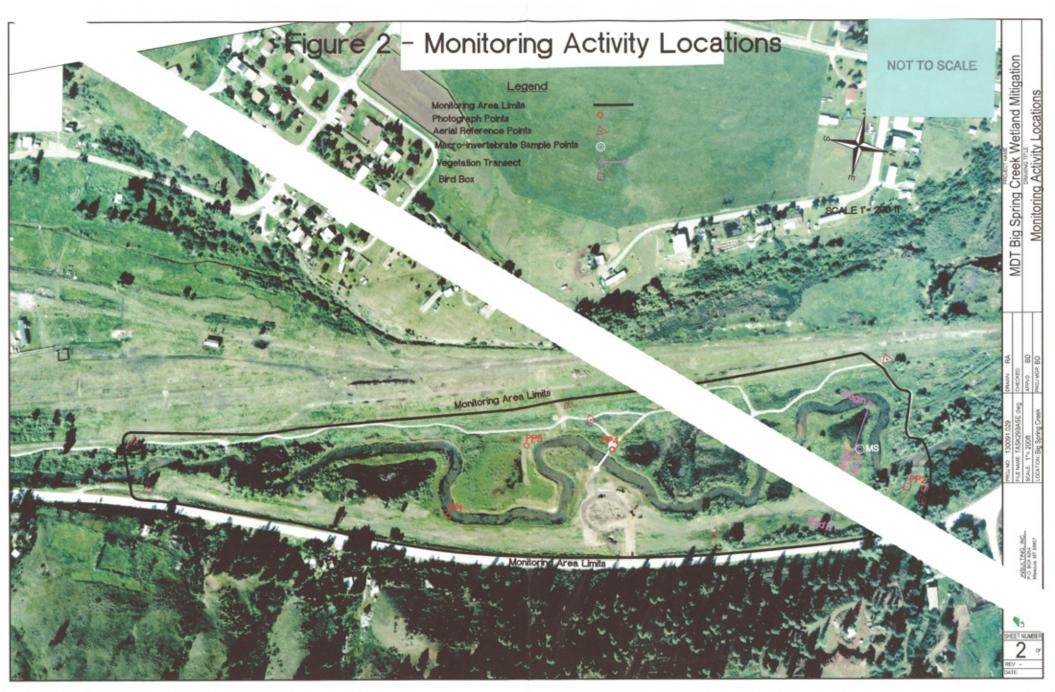


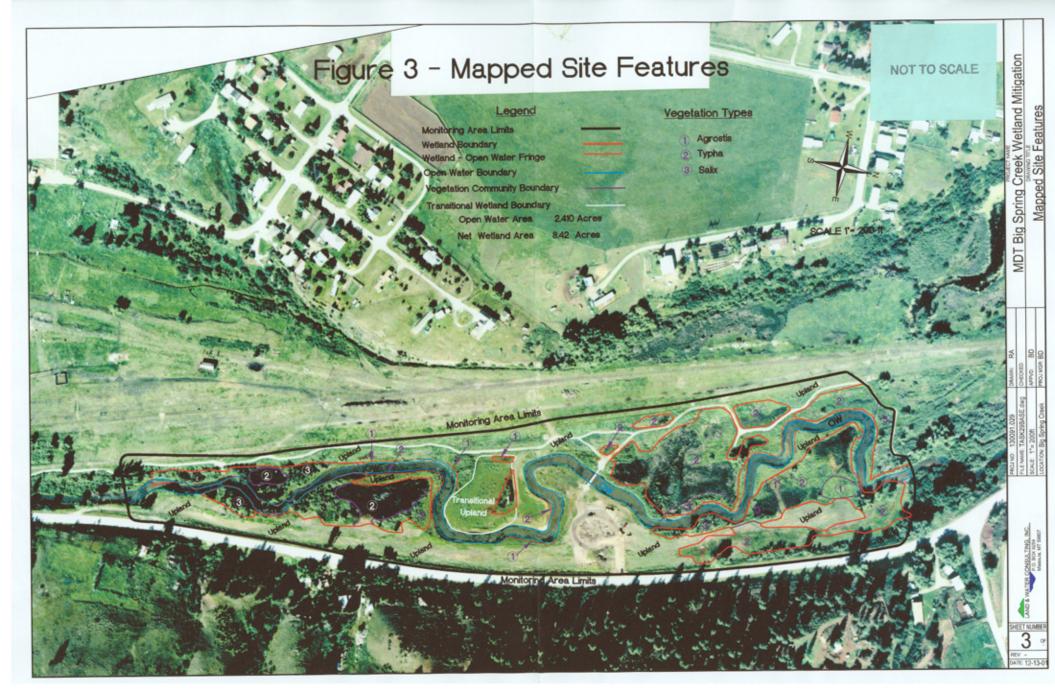
# Appendix A

# FIGURES 2 & 3

MDT Wetland Mitigation Monitoring Big Spring Creek Lewistown, Montana







# Appendix B

COMPLETED 2001 WETLAND MITIGATION SITE MONITORING FORM
COMPLETED 2001 BIRD SURVEY FORMS
COMPLETED 2001 WETLAND DELINEATION FORMS
COMPLETED 2001 FIELD AND FULL FUNCTIONAL
ASSESSMENT FORMS
MACROINVERTEBRATE SAMPLING DATA

MDT Wetland Mitigation Monitoring Big Spring Creek Lewistown, Montana



DRAFT -	MDT WET	LAND MIT	IGATION SI	TE MONIT	ORING FOR	
Project Name: Big Location: Lewiston: T Legal description: T Weather Conditions: Initial Evaluation Dat Size of evaluation ar	15N R/8E Se Sunny, Dry le: 08/29/8	Per Visit #:	ne of Day: 10:0 rson(s) conducti Monitor	Milep 00 - 5:00 ng the assessme ing Year: 1	ent: MT, 5B	
		HY	DROLOGY			
Surface Water Inundation: Present_ Assessment area under Depth at emergent ve If assessment area is a Other evidence of hydron side pere	er inundation: 3 getation-open v not inundated and drology on site	0 % vater boundary: re the soils satu (drift lines, cros	1-2 ft (along rated w/in 12" o sion, stained veg	5+ream) of surface: Yes getation etc.): _	No No	Hond's_
Groundwater	racant	Abrant /				
Monitoring wells: Pa Record depth of water			-			
Well #	Depth	Well#	Depth	Well#	Depth	
******	Бериг	Well #	Бериг	Well #	Deptin	
		<del> </del>				
Additional Activities  Map emergent of Observe extent elevations (drift lines NA GPS survey gr  COMMENTS/PRODE CENTER OF S. To Adjacont to the Activity of Saturated on Groundwale of	vegetation-open of surface water , erosion, vegets oundwater mon	r during each si ation staining e	te visit and look te) ecations if presen		cruk in application of past surface was in applicated in application of the proof o	proximale Area and state

# COMPREHENSIVE VEGETATION LIST

A		
LAND & WATER	B-2	

Species	Vegetation	Species	Vegetation
	Community		Community
	Number(s)		Number(s)
AGR CAN beauted Wheatgrass		AVE FAT Wild oats	
AGR INT informedale Wheatgross		POLLAP Willow-weed	
SON ARV field southistle		PHA ARU reed conornary rang	
TRI FRA Stranburn Clover		ALO PRA meadow foxfail	
TRI REP White closer		BEC 592 American Sloughsrors	
MEL ALB While Sweetclover		JUN ENS Three-Stamen rugh	
PLA MAJ broad-kot plantale		CAL INE narrow-spike reedgrass	
POP DEL COSTER LOTTONWOOD	.,,.	GLYLEP American Incorice	
SHE CAN Silver buffaloberry		VERTHA mullein	
ALL PRA timothy		CORSTO red-oser dogwood	
SALEXI Sondbar Willow		CARUTR beaked Sedge	
MEL OFF YEllow Sweetcloner		CAR AQU Water sedge	
BRO INE Smooth brome		CARNEG Nebroska sudge	
Runcel Carly dock		VALAPE catchweed bedstraw	
CIEARY Canada thirtle		SIS ALT tumble mustard	
MED LUP black medic		POL MON rabb. + foot grass	
ACH MIL MESTERN YORROW	<u> </u>	IVA XAN morsh elder	
AST Sp. aster specks		SCI Ach hard-stem bulrush	
POA PRA Kentucky bluegrass		SOL CAN Canada golden rod	
AGR ALB redtop		LIN VUL yellow toodflax	
TAR OFF dondelion		SCIMIC Small-fruited buleush	
HOR JUB fortail barley		AGRREP GHOCKGrass	
ERY ARY field horsetail		JUNBUF Food rush	
SAL AMY peoch-leaf Willow		14CAME American busheweed	
POS NOO Woods Pose		MENARY field mint	
DAC 660 Orchard grass		SCIPUN three-square bulrush	
EPI CIL hairy Willow-herb		JUNI TOR Torrey'S rush	
TYPLAT broad-geat cattail		mut min least muhly	
ELO CAN Comada waterweed		ELEPAL Creeping spikerush	
RAN ADU While Mater butter cup		LACSER Prickly lettuce	
JUNNOD Knotted rush		SALLUT YENOW WILLOW	
NAS OFF True Water cress		GLY ELA fall manna grass	
BID CER nodding beggers ticks		ELH CRU bornyard grass	
LEM MIN duckweed		AMB TRI Common ragued	
THE ARY field penny cress		ARCMIN burdock	

COMMENTS/PROBLEMS:	CON MAC - polson	homlock, &	BET OCL - Water buch	
PRW VIR - common Choke SAG CUN - nowhern army	chessen POP ANG-	nacrow leaved	Cottonwood	
SAG CUN - northern arrow	head		* /	

	VEGETATION C	COMMUNITIES AND WATE	B-3
Community No.:/_ Community Tit	le (main species):_	Agrostis alba	
Dominant Species	% Cover	Dominant Species	% Cover
AGR ALB	>50	CAR AQU	11-20
MEN ARV	11-20		
BID CER	1-5		
EQU ARV	11-20		
JUN NOD	11-20		
COMMENTS/PROBLEMS:			
·			
Community No.: 2 Community Titl	le (main species):_	Typha latitolia	
Dominant Species	% Cover	Dominant Species	% Cover
TYP LAT	750	CAR NEB	6-10
SCIACU	6-10	CAR AQU	6-10
PHA ARU	11-20		
SCI PUN	1-5		
AGR ALB	6-10		
COMMENTS/PROBLEMS:			
Community No.:_ <u>ح</u> Community Titl	le (main species):_	Salix	
Community No.: Community Titl	le (main species):_	Sali'x  Dominant Species	% Cover
		Salix	% Cover
Dominant Species	% Cover	Sali'x  Dominant Species	
Dominant Species SAL LUT	% Cover >50	Sali'x  Dominant Species	
Dominant Species SAL LUT SAL AMY	% Cover >50 21-50	Sali'x  Dominant Species	
Dominant Species  SAL LUT  SAL AMY  SAL EXI	% Cover >50 2-1-50	Sali'x  Dominant Species	
Dominant Species  SAL LUT  SAL AMY  SAL EXI  CAL INE  MEN ARV	% Cover >50 21-50 21-50 6-10	Sali'x  Dominant Species	
SAL LUT SAL AMY SAL EXI CAL INE	% Cover >50 21-50 21-50 6-10	Sali'x  Dominant Species	
Dominant Species  SAL LUT  SAL AMY  SAL EXI  CAL INE  MEN ARV	% Cover >50 21-50 21-50 6-10	Sali'x  Dominant Species	% Cover 6-10
Dominant Species  SAL LUT  SAL AMY  SAL EXI  CAL INE  MEN ARV	% Cover >50 21-50 21-50 6-10	Sali'x  Dominant Species	
Dominant Species  SAL LUT  SAL AMY  SAL EXI  CAL INE  MEN ARV	% Cover >50 21-50 21-50 6-10	Sali'x  Dominant Species	
Dominant Species  SAL LUT  SAL AMY  SAL EXI  CAL INE  MEN ALV  COMMENTS/PROBLEMS:	% Cover >50 21-50 21-50 6-10	Dominant Species  AGR ALB	

•	EGETATION C	COMMUNITIES (Cont.) CAND	WATER B.
Community No.: 4 Community Title	e (main species):_	apland	
Dominant Species	% Cover	Dominant Species	% Cover
AGR CAN	21-50	THL ARV	21-50
AGR REP	21-50	MEL ALB	6-10
SON ARV	21-50	mee neg	6.10
GIR ARV	11-20		
AMB TRI	21-50		
COMMENTS/PROBLEMS:			
		1. 1. 1. 1	
Community No.: 5 Community Title			
Dominant Species	% Cover	Dominant Species	% Cover
AGR ALB	21-50	MED LUP	21-50
POL LAP	1-5		
SON ARY	21-50		
THL ARV	21-50		
TRI FRA	21-50		
COMMENTS/PROBLEMS:			
Community No.: Community Title	(main species):_		
Dominant Species	% Cover	Dominant Species	% Cover
COMMENTS/PROBLEMS:			
Additional Activities Checklist:Record and map vegetative commi	unities on air phot	o	



MDT WETLAND MONITO	ORING - VEGETATION TRANSECT
Site: Bis Spring Creek Date: 8/29/01	Examiner: MT, 3B Transect # /
9 1 2	ection from Start (Upland): 94°
Vegetation type 1: Upland  Length of transect in this type: 17 feet  SON ARV 6-10%.  AGR CAN 750%.  CIR ARV 6-10%.  MEN ARV 1-5%.  POA PRA 1-5%.  TRI FRA 1-5%.	Vegetation type 2:         74P LAT           Length of transect in this type:         /55         feet           TYP LAT         750         FLE PAL         750           AGR ALB         /-5         MEN ARY         /-5           JUN NOO         6-10         GER DEM         /-5           SAG CUN         /-5         GAR NEB         /-5
Total Vegetative Cover: /00	ALO PRA 6-10  LEM MIN 6-10  CAR AQU 1-5  BID CER 4    Total Vegetative Cover: 90
Vegetation type 3: AGR ALB	Vegetation type 4: Upland
Length of transect in this type: 95 feet  AGR ALB 21-50	Length of transect in this type: 87 feet  Son ARV 11-20
CAL INE 1-5 FAI CIL 1-5	AGR CAN 1-5
MEN ARV 11-20 BID CER 1-5	AMB TRI 1-5 THL ARV >50
DAC GLO CI AGR CAN 1-5 HOR JUB CI	JVA XAN 6-10 HOR JUB 61 CIR ARV 1-5
CON MAC <1 EMM CRI	CIR ARV 1-5 SIS ALT CI TRI FRA 1-5
Total Vegetative Cover: /00	Total Vegetative Cover: 90



MDT WETLAND MONITO	RING - VEGETATION TRANSECT
Site: Big Spring Creek (cont.) Date:	Examiner: Transect # / Cont. >
Approx. transect length: Compass Dire	ection from Start (Upland):
Vegetation type 1:5 TYPLAT	Vegetation type 2:6 Upland
Length of transect in this type: 40 feet	Length of transect in this type: 8 feet
TYPLAT 750	TRI FRA 6-10
EPI CIL 1-5 JUN NOD 11-20	TUA XAN 6-10
JUN 70R 1-5	CIE ARV 6-10 THL ARV 21-50
GLYELA 1-5	AGRINT 1-5
ELE PAL 21-50	
BEC 542 <1	
SCIACU 1-5	
ALOPRA LI AGRALB LI	
TRIFRA ZI	
POL LAP LI	
Total Vegetative Cover: IPO	Total Vegetative Cover: 80
Vegetation type 3: 7 79P LAT	Vegetation type 4:8 Upland
Length of transect in this type: 8 feet	Length of transect in this type:   \$   feet
TYPLAT 21-50	SONARY 750
JUNBUF 750	HOR 34B 21
EPICIL 1-5	AGR INT 11-20
POILAR 1-5 CIRARY SI	THE ARV 11-20
AGR ALB	PA MAS 1-5 PA LAT 1-5
TRIFRA 1-5	TRIFRA 1-5
	AMB TRI <1
Total Vegetative Cover: 100	Total Vegetative Cover: 80



# MDT WETLAND MONITORING - VEGETATION TRANSECT (back of form)

Cover Estimate + = <1% 3 = 11-20% 1 = 1-5% 4 = 21-50% 2 = 6-10% 5 = >50%	Indicator Class: + = Obligate - = Facultative/Wet 0 = Facultative	Source: P = Planted V = Volunteer
Percent of perimeter 70	% developing wetland vegetation – ex	cluding dam/berm structures.
this location with a standard meta	al fencepost. Extend the imaginary transec	The transect should begin in the upland area. Permanently mark at line towards the center of the wetland, ending at the 3 food depth ed. Mark this location with another metal fencepost.
Estimate cover within a 10 ft wid the wetland. Remember that the	e "belt" along the transect length. At a mi purpose of this sampling is to monitor, not	inimum, establish a transect at the windward and leeward sides of tinventory, representative portions of the wetland site.
Notes:		

## PLANTED WOODY VEGETATION SURVIVAL

par.		
LAND	& WATER	B-S

Species	Number	Number	Mortality Causes
	Originally	Observed	
	Planted		
SAL AMY	43,500 total	Seebelow *	
SAL EXI	3 ~ 5,50		
	21	212-14 dead	,
DOP DEL POP ANG	30	None dead	several observed
ET OCC	3	~5 dead	Lew observed
05 NOO	10	None dead	One observed
02 570	130	None dead	Few observed
60 TRI	24	14-15 dead	
RU VIR	120	10-10 dead	
HE CAN	30	None dead	few observed
RA PEN	30	None dead	
PA PEN ZIB AUR	35 50	None Lead,	few observed
OP TRE	50	None dead	few observed
CRA DOY	10	2 dead	

those above	OHLY mack were	! Serveral hundred primarily affire It mark Claunda	Pert 2 90% Sucrival)
dead Cest h	5-10% Survival)		

At each site conduct the items on the checklist below:  Delineate wetlands according to the 1987 Army Corps manual.  Delineate wetland-upland boundary on the air photo Survey wetland-upland boundary with a resource grade GPS survey	AND & WATER B-9
COMMENTS/PROBLEMS:	
FUNCTIONAL ASSESSMENT Collect information to complete MDT Function and Values Assessment in the off	īce.
Jeff is completing this section	
COMMENTS/PROBLEMS:	
Were man-made nesting structures installed at this site? YES NO  If yes, do they need to be repaired? YES NO	. 14
If yes, describe problems below and indicate if any actions were taken to remedy	the problems. Aft
Were man-made structures build or installed to impound water or control water flo	
If yes, are the structures working properly and in good working order? YES If no, describe the problems below.	NO NA
COMMENTS/PROBLEMS:	

		٨		W	ILDLIFE			LAND &	WATER B-1	0
- See bird	Sura	Lorm	~		BIRDS					
Species	Number O Observed	Nesting or Breeding Activity	Likely Breeding Resident	Likely Migratio		Species	Number Observed	Nesting or Breeding	Likely Breeding	Likely Migrating
		Acuray	Kessen					Activity	Resident	<del> </del>
					$\dashv \vdash -$					
					-					-
				-						-
				-						-
				<del> </del>						
					_					-
										-
+										
Were man made structures being	nesting st utilized?	Yes			No e nesting stre		How man repairs?	y?/ (es)	Are the	enesting
	Speci	es			Number			indication	of use	
, , , , ,					Observed	Tracks	Scat	Bur	rows	Other
Bean	Lear				1	XX		_		<u> </u>
Meadow. Vole					Numerous	1 22	1			
Cottontail										
western terresto					3	-				
Western Chou	is trogs				Humerous	-	-			
	· · · · · · · · · · · · · · · · · · ·									
							<u> </u>			
Additional Acti Macroinve	ertebrate s	ampling	_	-			4.	. //	,	
comments/	PROBLE	MS:	cande	L CI	set.	pre-ex	sting 1	SeAlan	1 nec	2/

#### PHOTOGRAPHS

LAND & WATER B-11

Using a camera with a 50 mm lenses and color film take photographs of the following permanent reference points listed in the checklist below. Record the direction of the photograph using a compass. (The first time at each site establish a permanent reference point by setting a ½ inch rebar or fencepost extending 2-3' above ground, survey the location with a resource grade GPS and mark the location on the air photo.) Checklist:

_X_	One photo for each of the 4 cardinal directions surrounding wetland
X	At least one photo showing upland use surrounding wetland - if more than one
	upland use exists take additional photos
X_	At least one photo showing buffer surrounding wetland
_X_	One photo from each end of vegetation transect showing transect

Location	Photo Frame #	Photograph Description	Compass Reading
A	PP 1	New Big Spring Creek channel	346°N
В	PP1	Transitional upland area on inside bend of Creek	300 NW
С	PP1	New Big Spring Creek channel	260° W
D	PP 2	Location of old creek channel - developing wetland	155° SE
Е	PP3	Planted woods vegetation	190° SW
F	PP3	new Channel	340° N
G	PP4	existing puregent marsh community	15°NE
Н	PPLI	new channel and plantings	200° SW

COMMENTS/PROBLEMS:	
8P5 - New Channel south of Foot bridge	10° N
PPS - Transitional upland w/ plantings	100° E
Vegetation Transect Start - 940 E	
Verptostion Transect End - 274° W	
,	

GPS SURVEYING Using a resource grade GPS survey the items on the checklist below. Collect at least 3 location points with the GPS unit set at 5 second recording rate. Record file numbers fore site in designated GPS field notebook
Checklist:
Jurisdictional wetland boundary
4-6 landmarks recognizable on the air photo Start and end points of vegetation transect(s)
Photo reference points  Groundwater monitoring well locations
COMMENTS/PROBLEMS:

#### **BIRD SURVEY - FIELD DATA SHEET**

SITE: Bly Spring Cruk

8/29/01

Page 1 of Date: 8/2 V01 5/3 9/0 /
Survey Time: 10:00 - 5:00 3:00 - 2:00

Habitat Type Behavior Habitat Type Behavior Bird Species 55 4ellowthroat American Robin Killdeer MA 55 oheo sant vellow warbler 5/29/01 UP Rough-winged swallow Streoms edge ī spotted sandpiper 55 Ted-winged blackbird 附兵 55 EM Firm-wecked pheasant MA F Em 33 EM MA M A common mallaro MA Commun suine NOTES:

Behavior: BP - one of a breeding pair; BD-breeding display; F - foraging; FO - flyover; L - loafing; N - nesting Habitat: AB - aquatic Bed; FO - forested; I - Island; MA - marsh; MF: Mud Flat; OW - open water; SS - scrub-shrub; UP - upland buffer; WM - wet meadow

F:/clients/215/data/birddatasheets

Spring Civek Date: 8/29/01 By: SE

HGM Class (CIRCLE) Cowardin Class Fat % Predominant Water Regime (CIRCLE) of AA Mineral Soil Flats Emergent 40-60 Perm Flood Int Exp Sem Perm Flood (Seas Flood) Sat Tem Flood Int Flood Organic Soil Flats Aquatic Bed Perm Flood Int Exp Sem Perm Flood Riverine (nonperennial) Seas Flood Tem Flood Int Flood (Riverine (upper perennial) Moss-Lichen Int Exp Perm Flood Sem Perm Flood Seas Flood Tem Flood Int Flood Riverine (lower perennial) Lacustrine Fringe Scrub-Shrub 40-60 Perm Flood Int Exp Sem Perm Flood Seas Flood Tem Flood Int Flood Depression (closed) Forested Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Depression (open, groundwater) Unconsolidated Bottom Perm Flood Int Exp Depression (open, surface water) Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Other: Rock bottom 10% Int Exp Slope Perm Flood Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Organic Soil Flats Total Estimated % Vegetated 90% RELATIVE ABUNDANCE: rare (com.) DISTURBANCE is: High Moderate Low HYDROLOGY: Max. acre-ft surf. water at wetlands in AA subject to inundation: <1 (1-5) >5 (if no flooding/ponding, go to groundwater\* section) Does AA contain surface or subsurface outlet? N If outlet present, is it restricted (subsurface will always be "yes") (Y) Longest duration of surface water: Surface Water Duration and other attributes (circle) at any wetlands within AA Perm / Peren Seas / Intermit Temp / Ephern in at least 10% of AA (both wetlands and nonwetlands [deepwater, streambed...] Perm / Peren Seas / Intermit Temp / Ephem Where fish are or historically were present (circle NA if not applicable) Perm / Peren Seas / Intermit Temp / Ephem % of waterbody containing cover objects >25% 10-25% <10% % bank or shore with riparian or wetland shrub or forested communities >75% 50-74% <50% adjacent to rooted wetland vegetation along a defined watercourse or shoreline subject to wave Perm / Peren Seas / Intermit Temp / Ephem action (circle NA if not applicable) % cover of wetland bank or shore by sp. with binding rootmasses >65% 35-64% <35% Flood Attenuation: Do any wetlands on site flood as a result of in-channel or overbank flow Y N (if no, go to groundwater\* section below) Estimated wetland area subject to periodic flooding (acres): Estimated % of flooded wetland classified SS, FO or both: <25 List: Alluvial flow Evidence of groundwater discharge or recharge? HABITAT Habitat for Listed or Proposed Threatened, Endangered, or Montana Natural Heritage Program S1, S2, or S3 Plants or Animals: AA is Documented (D) or Suspected (S) to contain (circle based on definitions contained in instructions): Primary or critical habitat (list species) D S T/E: D S MNHP D S D S D S Secondary habitat (list species) D S MNHP Incidental habitat (list species) D S MNHP T/E: No usable habitat D S MNHP Wildlife observations? Fish observations? +row OTHERS Do wetlands have potential to receive excess sediments, nutrients, or toxicants? Potential to receive (low to moderate levels) Does site contain bog, fen, warm springs, >80 year-old forested wetland, or MNHP "S1" or "S2" plant association? List: Fishing - Park
Nypo: Recreation + Education - School nearby. Is AA a known recreation / education site? Does AA offer strong potential for use as recreation reducation site?

Site: Dia

**Brief Description:** 

Field Data Sheet for 1999 MDT Wetland Assessment Form

Estimated AA Size (Circle Ac.): <1 1-5(>5)

HGM Class (CIRCLE) Cowardin Class Est. % Predominant Water Regime (CIRCLE) AA lo Mineral Soil Flats Emergent Perm Flood Int Exp Sem Perm Flood (Seas Flood) Tem Flood 100 Sat Int Flood Organic Soil Flats Aquatic Bed Perm Flood Int Exp Sem Perm Flood Riverine (nonperennial) Seas Flood Sat Tem Flood Int Flood Riverine (upper perennial) Moss-Lichen Int Exp Perm Flood Sem Perm Flood Seas Flood Tem Flood Int Flood Riverine (lower perenrual) Lacustrine Fringe Scrub-Shrub Perm Flood Int Exp Sem Perm Flood Seas Flood Tem Flood Sat Int Flood Depression (closed) Forested Perm Flood Int Exp Depression (open, groundwater) Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Unconsolidated Bottom Depression (open, surface water) Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Other: Int Exp Perm Flood Sem Perm Flood Seas Flood Sat Tem Flood Slope Int Flood Organic Soil Flats 100 Total Estimated % Vegetated RELATIVE ABUNDANCE: rare (com) abun. DISTURBANCE is: High Moderate Low HYDROLOGY: Max. acre-ft surf. water at wetlands in AA subject to inundation (<1) 1-5 >5 (if no flooding/ponding, go to groundwater\* section) Does AA contain surface or subsurface outlet? N If outlet present, is it restricted (subsurface will always be "yes") [Y Longest duration of surface water: Surface Water Duration and other attributes (circle) at any wetlands within AA Perm / Peren Seas / Intermit Temp / Ephem in at least 10% of AA (both wetlands and nonwetlands [deepwater, streambed...] Perm / Peren Seas / Intermit Temp / Ephem Where fish are or historically were present (circle NA ) f not applicable) Perm / Peren Seas / Intermit Temp / Ephem % of waterbody containing cover objects >25% 10-25% <10% % bank or shore with riparian or wetland shrub or forested communities >75% 50-74% <50% adjacent to rested wetland vegetation along a defined watercourse or shoreline subject to wave Perm / Peren Seas / Intermit Temp / Ephem action (circle NA I not applicable) % cover of wetland bank or shore by sp. with binding rootmasses >65% 35.64% <35% Flood Attenuation: Do any wetlands on site flood as a result of in-channel or overbank flow? Y N (if no, go to groundwater section below) Estimated wetland area subject to periodic flooding (acres): ≥10 2-10 Estimated % of flooded wetland classified SS, FO or both: ≥75 25-74 <25 List: Alluvial flow \*Evidence of groundwater discharge or recharge (Y) Ν HABITAT Habitat for Listed or Proposed Threatened, Endangered, or Montana Natural Heritage Program S1, S2, or S3 Plants or Animals; AA is Documented (D) or Suspected (S) to contain (circle based on definitions contained in Instructions): Primary or critical habitat (list species) D S T/E: D S MNHP: Secondary habitat (list species) D S T/E D S MNHP Incidental habitat (list species) T/E: D S MNHP: None DS No usable habitat DS MNHP: None Wildlife observations? 500 50165 Fish observations?\_\_\_ OTHERS Do wetlands have potential to receive excess sediments, nutrients, or toxicants? Potential to receive: flow to moderate levels Does site contain bog, fen, warm springs, >80 year-old forested wetland, or MNHP "S1" or "S2" plant association? List: N Type: Is AA a known recreation / education site?

Field Data Sheet for 1999 MDI Wetland Assessment Form Site: 819 Spring Creek Date: 6/2 Vol By: 50

Brief Description:

Estimated AA Size (Circle Ac.): <1) 1-5 >5

Does AA offer strong potential for use as recreation / education site?

Site: B19 Spring Cruk Date: 8/2401 By: 5B/MT

HGM Class (CIRCLE) Est. % Predominant Water Regime (CIRCLE) Cowardin Class AAlo Mineral Soil Flats Emergent M Perm Flood Int Exp Sem Perm Flood Ceas Flood Sat Tem Flood Int Flood Organic Soil Flats Aquatic Bed Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Riverine (nonperennial) Riverine (upper perennial) Moss-Lichen Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Riverine (lower perennial) Scrub-Shrub Perm Flood Lacustrine Fringe Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Depression (closed) Forested Perm Flood Int Exp Sem Perm Flood Seas Flood Tem Flood Sat Int Flood Depression (open, groundwater) Unconsolidated Bottom Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Depression (open, surface water) 90 Other: attom Perm Flood Int Exp Sem Perm Flood Seas Flood Sat Tem Flood Int Flood Slope Organic Soil Flats Total Estimated % Vegetated 0 RELATIVE ABUNDANCE: rare (com.) abun. DISTURBANCE is: High Moderate Low HYDROLOGY: Max. acre-ft surf. water at wetlands in AA subject to inundation (<1) 1-5 >5 (if no flooding/ponding, go to groundwater\* section) Does AA contain surface or subsurface outlet? If outlet present, is it restricted (subsurface will always be "yes")? Y Longest duration of surface water: Surface Water Duration and other attributes (circle) Perm / Peren at any wetlands within AA Seas / Intermit Temp / Ephem in at least 10% of AA (both wetlands and nonwetlands [deepwater, streambed...] Perm / Peren Seas / Intermit Temp / Ephem Perm / Peren Where fish are or historically were present (circle NA if not applicable) Seas / Intermit Temp / Ephem >25% % of waterbody containing cover objects 10-25% <10% % bank or shore with riparian or wetland shrub or forested communities >75% 50-74% <50% adjacent to rooted wetland vegetation along a defined watercourse or shoreline subject to wave Perm / Peren Seas / Intermit Temp/Ephem action (circle NA if not applicable) % cover of wetland bank or shore by sp. with binding rootmasses >65% 35-64% <35% Flood Attenuation: Do any wetlands on site flood as a result of in-channel or overbank flow Y N (if no, go to groundwater\* section below) Estimated wetland area subject to periodic flooding (acres): ≥10 2-10 Estimated % of flooded wetland classified SS, FO or both: ≥75 25-74 List Alluvial flow \*Evidence of groundwater discharge or recharge? (Y) N HABITAT Habitat for Listed or Proposed Threatened, Endangered, or Montana Natural Heritage Program S1, S2, or S3 Plants or Animals: AA is Documented (D) or Suspected (S) to contain (circle based on definitions contained in instructions): Primary or critical habitat (list species) DS T/E: D S MNHP. D S D S MNHP Secondary habitat (list species) T/E D S Incidental habitat (list species) D D S T/E MNHP T/E: NONE MNHP: NONE No usable habitat horebirds Wildlife observations? Fish observations? OTHERS Do wetlands have potential to receive excess sediments, nutrients, or toxicants? Y N Potential to receive: low to moderate levels On TMDL List? high levels Does site contain bog, fen, warm springs, >80 year-old forested wetland, or MNHP "S1" or "S2" plant association? List: Y N Type: Is AA a known recreation / education site?

Brief Description:

Field Data Sheet for 1999 MDJ-Wetland Assessment Form

Does AA offer strong potential for use as recreation / education site?

Estimated AA Size (Circle Ac.): (<1) 1-5 >5

Evaluation Date: Mo. 08	Day 29 Yr. 01 4. E	Evaluator(s):B	taland /1	axler 5. Wet	lands/Site	#(s) Large 1	polygons	2
Wetland Location(s): I. Le II. Approx. Stationing o	gal: T /5 (Nor S; R /8 r Mileposts:	Erys 2	3 Islaulh a	long Big		E or,W; S	An	ca:
III. Watershed:	tion: -	S Reference No.	(if applies):	NA				
	: illy affected by MDT projects; pre-construction ds; post-construction	8. Wetlan (Cod  \$ 9. Assess see instru	ment area: (A ctions on deter	mining AA) ~	(mea	ually estimated) asured, e.g. by GP  (visually estin (measured, e	nated) .g. by GPS [i	if applies])
HGM Class	System		system	AI, HIST COL, USF	Class	Water Regime	Modifier	% of A
2.40'- 0	P1	1101	er oelen	ا مندا	RB	#	EX	1220
siverine	Palustrine	17	er peren	714	EM	FIC	-	240
lı	Palustrine				55	FIC	-	240
	Parastire				133	170	1	170
								<b>†</b>
					<del>                                     </del>		<del></del>	
nergent Welland (EM), Scrub-Shrub 5, EM/System; Riverine (RV Subsy- ermittently Exposed (Q), Semiperma	Wetland (SS), Forested Wetland st; Lower Perennial (2)/ Classes anently Flooded (F), Seasonally F	(FO)/ System: Lacu RB, UB, AB, US, EA looded (C), Saturated	strine (LV, Subsys V Subsystem: Up) (B), Temporarily Fi	st.; Limnetic (2)/ Class per Perennial (3)/ Class looded (A), Intermitten	es: RB, UB, A ises: RB, UB, tly Flooded (J)	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated	(4)/ Classes: R es: Permanently	B, UB, AB. Flooded (H
nergent Wetland (EM), Scrub-Shrub 5, EM/ System: Riverine (RV Subsy- ermittently Exposed (G), Semiperma ), Partly Drained (PD), Farmed (F), A	Wetland (SS), Forested Wetland st: Lower Perennial (2)/ Classes anently Flooded (F), Seasonally F utilicial (A) HGM Classes: River	(FO)/ System: Lacu i: RB, UB, AB, US, EA looded (C), Saturated rine, Depressional, Sk	strine (LV, Subsys V Subsystem: Up; (8), Temporarity Fi spe, Mineral Soil Fi	st.; Limnetic (2)/ Class per Perennial (3)/ Class looded (A), Intermitten lats, Organic Soil Flats	es: RB, UB, A ises: RB, UB, tly Flooded (J) i, Lacustrine F	B/ Subsystem: Ultoral AB, US/ Water Regim ) Modifiers: Excevated ringe	(4V Classes: R es; Permanently (E), Impounded	B, UB, AB. y Flooded (H)
nergent Wetland (EM), Scrub-Shrub EM/ System: Riverine (RV Subsy- emiltently Exposed (G), Semiperma Party Oralned (PD), Farmed (F), A Estimated relative abund (Circle one) Comments:	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonally F vitificial (A) HGM Classes: River dance: (of similarly classif Unknown	(FO)/ System: Lacu E: RB, UB, AB, US, EA looded (C), Saturated rine, Depressional, Sk lied sites within th Rare	strine (LV, Subsys W Subsystem: Upi (B), Temporarly F ipe, Mineral Soil F e same Major I	at; Limnetic (2)/ Class per Perennial (3)/ Class looded (A), Intermitten lats, Organic Soil Flats Montana Watersh Common	es: RB, UB, A ises: RB, UB, tly Flooded (J) i, Lacustrine F	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated ringe see definitions)	(4V Classes: R es; Permanently (E), Impounded	B, UB, AB. y Flooded (H):
ergent Wetland (EM), Scrub-Shrub, EM/ System: Riverine (R// Subsystem)therity Exposed (G), Semiperma, Party Oralned (PD), Farmed (F), A . Estimated relative abund (Circle one) Comments:	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonaby F vtrificial (A) HGM Classes: Rive dance: (of similarly classif Unknown : :: ::::::::::::::::::::::::::::::	(FO)/ System: Lacus: RB, UB, AB, US, EA tooded (C), Saturated rine, Depressional, Skilled sites within the Rare	strine (LV, Subsys V Subsystem: Up) (B), Temporarly Fi spe, Mineral Soil Fi e same Major i  ppropriate res  Predomi	at; Limnetic (2)/ Class per Perennial (3)/ Class per Perennial (3)/ Class looded (A), Intermitten lats, Organic Soil Flats Montana Watersh Common  ponse)  nant conditions ac	es: RB, UB, A sses: RB, UB, A ty Flooded (J) , Lecustrine F ed Basin, s	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excavated ringe  see definitions) Abunda	(4) Classes: Res: Permanently (E), Impounded	B, UB, AB, y Flooded (H) g (I), Oiked
nergent Wetland (EM), Scrub-Shrub, EM/ System: Riverine (RV Subsystem: Riverine (RV Subsystem: Party Drained (PD), Farmed (F), And Circle one) Comments:  Ceneral condition of AA i. Regarding disturban	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonaby F vtrificial (A) HGM Classes: Rive dance: (of similarly classif Unknown : :: ::::::::::::::::::::::::::::::	(FO)/ System: Lacu E: RB, UB, AB, US, EA looded (C), Saturated rine, Depressional, Sk lied sites within th Rare	strine (LV, Subsys W Subsystem: Up) (B), Temporariy Fi spe, Mineral Soil Fi e same Major I e same Major I eppropriate res Predominantly grazed, hayed, e converted,	at; Limnetic (2)/ Class per Perennial (3)/ Class per Perennial (3)/ Class looded (A), Intermitten lats, Organic Soil Flats  Montana Watersh  Common	es: RB, UB, A sses: RB, UB, A sses: RB, UB, ty Flooded (J) i, Lecustrine F sed Basin, s  fiscent to (i but moderate selectively log t to minor clea	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated ringe see definitions) Abunda  within 500 feet of) Land cuttivates subject to sub- ring: clearing, or hy	(4) Classes: Res: Permanently (E), Impounded  AA  Ac or heavily grazestantial filt placestrological atterat	B, UB, AB, y Flooded (H) d (I). Diked
nergent Welland (EM), Scrub-Shrub, EM/ System: Riverine (RV Subsystem: Riverine (RV Subsystem: Reposed (G), Semiperma, Party Drained (PD), Farmed (F), Art., Estimated relative abund (Circle one) Comments:  2. General condition of AA  i. Regarding disturban  Conditions w  cocurs and is managed in predomized, hayed, logged, or otherwise co	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes snently Flooded (F), Seasonally F Artificial (A) HGM Classes: River dance: (of similarly classif Unknown : : :: :: ::: ::: ::: ::: ::: ::: :::	(FO)/ System: Lacus: RB, UB, AB, US, EN tooded (C), Saturated rine, Depressional, Skilled sites within the Rare   Land managed in a natural state, is not togged, or otherwise.	strine (LV, Subsys W Subsystem: Up) (B), Temporariy Fi spe, Mineral Soil Fi e same Major I sppropriate res Predomi predominantly grazed, hayed, a converted, ads or buildings	ponse)  Land not cultivated, grazed or hayed or or has been subject.	es: RB, UB, A ses: RB, UB, W ty Flooded (J) i, Lecustrine F  ed Basin, s  discent to (i but moderate selectively log t to minor clea or buildings.	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated ringe  see definitions) Abunda  within 500 feet of) by Land cultivater spec; subject to sub-	(4) Classes: Res: Permanently (E), Impounded  AA or heavily grazetantial filt placetorological alterations.	B, UB, AB, y Flooded (H) d (I). Diked
nergent Wetland (EM), Scrub-Shrub S, EM/ System: Riverine (R/ Subsy- ermittently Exposed (G), Semiperma ), Party Drained (PD), Farmed (F), A  I. Estimated relative abund (Circle one) Comments:  Z. General condition of AA  i. Regarding disturban  Conditions w  A occurs and is managed in predomi azed, hayed, logged, or otherwise co- ads or occupied buildings. A not cultivated, but moderately graz- gged; or has been subject to relative	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonally Florificial (A) HGM Classes: River dance: (of similarly classiff Unknown  : tice: (use matrix below to diffin AA  inantly natural state; is not priverted; does not contain and or selectively by minor clearing, fill	(FO)/ System: Lacus: RB, UB, AB, US, EN tooded (C), Saturated rine, Depressional, Skilled sites within the Rare   Land managed in a natural state, is not togged, or otherwis does not contain re-	strine (LV, Subsys If Subsystem: Up) (B), Temporarly Fi ppe, Mineral Soil Fi e same Major I  pporopriate res  Predomi predominantly grazed, hayed, e converted, ads or buildings	ponse)  Land not cultivated, grazed or hayed or or has been subject contains few roads.	es: RB, UB, Asses: RB, UB, thy Flooded (J), Lecustrine Feed Basin, so the but moderate selectively log to minor clear or buildings.	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated ringe see definitions) Abunda  within 500 feet of) By I Land cultivates subject to sub- ring: clearing, or hy- co-building dan	(4) Classes: Res: Permanently (E), Impounded  AA I or heavily grazestantial filt placestrological atterations	B, UB, AB, y Flooded (H) f (I). Diked
nergent Wetland (EM), Scrub-Shrub S, EM/ System: Riverine (R/ Subsylemilitently Exposed (G), Semiperma ), Party Drained (PD), Farmed (F), A  1. Estimated relative abund (Circle one) Comments:  2. General condition of AA i. Regarding disturban  Conditions w  A occurs and is managed in predominated, hayed, logged, or otherwise coads or occupied buildings. A not cultivated, but moderately grazed or has been subject to relative accement, or hydrological attention; of Acultivated or heavily grazed or log obstantial fill placement, grading, cle-	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonally Florificial (A) HGM Classes: River dance: (of similarly classif Unknown  :  ::  ::  ::  ::  ::  ::  ::  ::  ::	(FO)/ System: Lacus: RB, UB, AB, US, EN tooded (C), Saturated rine, Depressional, Skilled sites within the Rare state of	strine (LV, Subsys V Subsystem: Upi (B), Temporariy Fi spe, Mineral Soil	ponse)  Land not cultivated, grazed or hayed or on the subject contains few roads.  Land not cultivated, grazed or hayed or on has been subject contains few roads.  Low disturbance.	es: RB, UB, A sses: RB, UB, W ty Flooded (J) , Lecustrine F  ed Basin, s  fjacent to ( but moderate selectively clea or buildings.	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated ringe  see definitions) Abunda  within 500 feet of)  by  Land cultivates subject to subsidened december of the control o	(4) Classes: Res: Permanently (E), Impounded  AA  for heavily graze stantial filt places prological atterat with  cance	B, UB, AB, y Flooded (H) d (I). Diked
mergent Wetland (EM), Scrub-Shrub S, EM/ System: Riverine (R/ Subsystem: River	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonally F Artificial (A) HGM Classes: River dance: (of similarly classiff Unknown  : total content of the state of the seasonal of th	(FO)* System: Lacus: RB, UB, AB, US, EN tooded (C), Saturated fine, Depressional, String and the street state of the street state of the street state; is not togged, or otherwis does not contain rollow disturbance in the street state of the stree	strine (LV, Subsystem: Upi (B), Temporarity Fi (B), Temporarity Fi ope, Mineral Soil Fi e same Major I oppropriate res Predomi predominantly grazed, hayed, e converted, add or buildings thance	ponse)  Land not cultivated grazed or hayed or or has been subject contains few roads low disturbance moderate disturbance with a fight disturbance for a final policy of the first policy	es: RB, UB, A sses: RB, UB, M sses: RB, UB, ty Flooded (J) i, Lecustrine F sed Basin, s  flacent to (i but moderate selectively log to multidings.  thance	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated ringe  see definitions) Abunda  within 500 feet of) by Land cutivates subject to sub- dearing, only consultang das moderate d  high disturb	(4) Classes: Res: Permanently (E), Impounded  AA  for heavily graze stantial filt places prological atterat with  cance	B, UB, AB, y Flooded (H) d (I). Diked
mergent Wetland (EM), Scrub-Shrub S, EM/ System: Riverine (R/ Subsystem: Riverine (R/ Semiperma)), Partiy Drained (PD), Farmed (F), A  1. Estimated relative abund (Circle one) Comments;  2. General condition of AA I. Regarding disturban Conditions w  A occurs and is managed in predominated, hayed, logged, or otherwise occupied buildings. A not cultivated, but moderately grazed, not cultivated, but moderately grazegoed, or has been subject to relative accement, or hydrological alteration, of A cultivated or heavily grazed or logguistantial fill placement, grading, cleigh road or building density.  Comments: (types of dis III. Provide brief descriped on the found of the fou	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonally F Artificial (A) HGM Classes: River dance: (of similarly classiff Unknown  : toe: (use matrix below to diffin AA  inantly natural state, is not priverted; does not contain ed or hayed or selectively ly minor clearing, fill contains few roads or buildings. ped, subject to relatively aring, or hydrological alteration; sturbance, intensity, seasonal ends of minings. Priversellen, & introduced species ptive summary of AA and ends of the first of AB and the AB and the AB and the AB and the AB	(FO)/ System: Lacure (FO)/ System: Lacure (FO), AB, US, AB, US, EN tooded (C), Saturated fine, Depressional, String (FO) and the street (FO) and t	strine (LV, Subsystem: Upi (B), Temporarity Fi (B), Temporarity Fi (B), Temporarity Fi (B), Temporarity Fi (B), Mineral Soil Fi (B), Mineral Soil Fi (B), Mineral Soil Fi (B), Predominantly grazed, hayed, acconvented, add or buildings (C), Areas (B), Areas (C), Areas (C), Areas	porse)  mant conditions according for high disturbance  moderate disturbance	Figure 1 to (1) but moderate or buildings.  The bance of the buildings.  The bance of buildings.  The bance of buildings.	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated innee  see definitions) Abunda  within 500 feet of) Abunda  within 500 feet of) Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  high disturb  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda	AA  AA  AA  or heavily grazestantial filt placestrological alterations  bance  lance  lance  lance  lance  lance  lance	B, UB, AB, y Flooded (H) d (I). Diked
mergent Wetland (EM), Scrub-Shrub S, EM/ System: Riverine (R/ Subsystem: River	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonally F Artificial (A) HGM Classes: River dance: (of similarly classiff Unknown  : toe: (use matrix below to diffin AA  inantly natural state, is not priverted; does not contain ed or hayed or selectively ly minor clearing, fill contains few roads or buildings. ped, subject to relatively aring, or hydrological alteration; sturbance, intensity, seasonal ends of minings. Priversellen, & introduced species ptive summary of AA and ends of the first of AB and the AB and the AB and the AB and the AB	(FO)/ System: Lacure (FO)/ System: Lacure (FO), AB, US, AB, US, EN tooded (C), Saturated fine, Depressional, String (FO) and the street (FO) and t	strine (LV, Subsystem: Upi (B), Temporarity Fi (B), Temporarity Fi (B), Temporarity Fi (B), Temporarity Fi (B), Mineral Soil Fi (B), Mineral Soil Fi (B), Mineral Soil Fi (B), Predominantly grazed, hayed, acconvented, add or buildings (C), Areas (B), Areas (C), Areas (C), Areas	porse)  mant conditions according for high disturbance  moderate disturbance	Figure 1 to (1) but moderate or buildings.  The bance of the buildings.  The bance of buildings.  The bance of buildings.	B/ Subsystem: Littoral AB, US/ Water Regim ) Modifiers: Excevated innee  see definitions) Abunda  within 500 feet of) Abunda  within 500 feet of) Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  high disturb  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda  Land cultivates subject to sub- idearing, or hy- out-building dae  (moderate di  high disturb  Abunda	AA for heavily grazitantial fill places into the polyper polyper polyper pance pance place	B, UB, AB, y Flooded (H); Flooded (H). Oiked ed or lagged, ment, grading ion; high road
Comments:  2. General condition of AA  i. Regarding disturban  Conditions w  A occurs and is managed in predominated, hayed, logged, or otherwise couseds or occupied buildings.  A not cultivated, but moderately grazinged, or has been subject to relative lacement, or hydrological atteration, of A cultivated or heavily grazed or loggubstantial fill placement, grading, cleagh road or building density.  Comments: (types of dis II. Prominent weedy, all	Wetland (SS), Forested Wetland st.: Lower Perennial (2)/ Classes anently Flooded (F), Seasonally Fivificial (A) HGM Classes: River dance: (of similarly classiff Unknown  : total contains the state of	etermine [circle] a  Land managed in natural state, is not logged, or otherwis does not contain to low disturbance in etc.): Les Veres (including the logged of the logged or otherwis does not contain to low disturbance in etc.): Les Veres (including the logged of the	strine (LV, Subsystem Up) (B), Temporariy Fi (B), Mineral Soil Fi (B), Prodominanty (C)	porse)  mant conditions according for high disturbance  moderate disturbance	es: RB, UB, Asses: RB, UB, this ses: RB, UB, thi	B/ Subsystem: Littoral AB, US/ Water Regim Modifiers: Excevated innee  see definitions) Abunda  within 500 feet of) By Land cultivate: subject to sub- clearing, or hy- pubulishing can (moderate di high disturb high disturb high disturb  classes], see #10: ted classes (or	AA  AA  AA  or heavily grazestantial filt placestrological alterations  bance  lance  lance  lance  lance  lance  lance	B, UB, AB, y Flooded (H) of (I). Diked ed or logged, ment, grading lion; high road of the control of the contro

### SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

<ol> <li>Habitat for Federally</li> <li>AA is Documented (Diameter)</li> <li>Primary or critical habitat (list Incidental habitat (list No usable habitat</li> </ol>	) or Sus itat (list t speci	spected specie es)	(S) to (	conta C	in (circl	le one l		n de	finitions			nstru	ctions):		=					
II. Rating (use the conclu- this function)	sions fr	om i ab	ove and	the	matrix t	celow t	o arrive	at [c	ircle) the	funct	ional poi	ints a	and ratio	ng (H =	high, N	<b>Λ</b> = m	noderate	e, or L	= low) fo	or
Highest Habitat Level		doc./pr	imary	1	us/prin	nary	doc./s	seco	ondary	sus.	/second	lary	doc	/incide	ntal	sus.	/inciden	tal	None	1
Functional Points and Ra					9 (H)	-	.8 (M	)		.7 (1	A)		.5 (1	.)	(	.3 (L	1)		0 (L)	
Sources for documented us	se (e.g.	observa	ations, i	recor	ds, etc)	r.										_				
14B. Habitat for plant or a I. AA is Documented (D Primary or critical hab Secondary habitat (list Incidental habitat (list No usable habitat  II. Rating (use the conclu	) or Suritat (list it specie specie	spected t specie les) vs)	(S) to es)	conta C C	ain (circ	AJ.	le opo	on de	frog ,	P05	ined in i	₩€	ctions):	Uhra	±				= low] f	or
this function)		doc./pr	imanı	Т.	sus/prin	201	I doc/	lear	ondary	e iie	/second	lany	doc	/incide	ental	SUS	fincider	ntal	None	
Highest Habitat Level	.		ariary	_		ildi y	1		JI ICIGII Y		1	, as j			a rece			1001		
Functional Points and Ra Sources for documented us		1 (H)	ntions		8 (H)	Y-	.7 (N	1)		(.6(1	w)		.2 (	-)		.1 (L			0 (L)	-
14C. General Wildlife Ha I. Evidence of overall will Substantial (based on an XX observations of abundant wildlife sign	dife u y of the dant wik such a	se in the following diffe #'s as scat.	ng [cheo	ck]): spe	cies div	ersity (	during a	any p	period)		Low (	base v or r	d on an no wildli	y of th fe obse fe sign		s dur	ring pea	k use p	xeriods	
presence of extremely interviews with local by Moderate (based on any observations of scattle common occurrence adequate adjacent up interviews with local by	of the for ered will of wildling land for piologist	s with k ollowing dife gro fe sign od sour is with k	(check sups or such as ces knowled	ge of ]): indiv s sca ge of	the AA	or relati s, nest	vely few structur	spe res, ;	ocies dur game tra	ing pe ils, etc	into	ervier ds	ws with	local b		s with	h knowl		f the AA	
ii, Wildlife habitat feature (L) rating. Structural diver of their percent compositio seasonal/intermittent; T/E:	n of the	from #13 AA (se	3. For (	class Abb	cover to	to be co	onsidere surface	ed ev	venly dis er durati	tribute ons ar	d, veget e as foll definitig	ated ows:	classes P/P = p Lubese	must perman	be with ent/per	in 20	% of ea	ch othe	er in terr	ms
Structural diversity (see #13)				Hig							Ś	Mode	erate)			- 1		Lov	•	
Class cover distribution (all vegetated classes)		Eve	n			Unev	en			Eve	<b>シ</b> ー			Unev	en			Eve	n	
Duration of surface	P/P	S/1	T/E	A	P/P	S/I	T/E	A	P/P	S/I	T/E	A	P/P	S/1	T/E	A	P/P	S/I	T/E	A
water in ≥ 10% of AA					_	-		-		н	н	м	E	н	M	M	E	н	M	N
Low disturbance at AA (see #12i)	E	E	E	н	E	E	н	н	-	п	"	"	-	"		"	-			Ι.
Moderate disturbance at AA (see #12i)	н	н	н	н	н	н	н	м	E	н	М	М	н	м	M	-	н	м	L	L
High disturbance at AA (see #12i)	М	м	М	L	м	М	L	L	М	М	L	L	М	L	L	L	L	L	L	L
1000 11.27		-		-				-				_								

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low) for this function)

Evidence of wildlife use (i)	Wikdlife habitat features rating (ii)							
	Exceptional	High	Moderate	Low				
Substantial)	1(E)	(.9 (H))	.8 (H)	.7 (M)				
Moderate	.9 (H)	.7 (M)	.5 (M)	.3 (L)				
Minimal	.6 (M)	.4 (M)	.2 (L)	.1 (L)				



14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Perm	anent Rere	ennial)		onal / Intern			Temporary / Epheme			
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	≥10%	>25%	10-25%	<10%	>25%	10–25%	<10%		
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	н	Н.	Н	М	М	М	М		
Shading – 50 to 75% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	. н	(F)	М	М	M	М	М	L	L		
Shading - < 50% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	Н	М	М	М	L	L	L	L	L		

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in I above by one level [E = H, H = M, M = L, L = L]). Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable impaired Uses" including cold or warm water fishery or equation life support?

Y

N

Modified habitat quality rating = (circle)

E

H

M

L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low) for this function)

Types of fish known or				
Types of fish known or suspected within AA	Exceptional	High	Moderate	Low
Native game fish	1 (E)	(H))	.7 (M)	.5 (M)
Introduced game fish	.9 (H)	.8(H)	.6 (M)	.4 (M)
Non-game fish	.7 (M)	.6 (M)	.5 (M)	.3 (L)
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)

comments: Mr. Whitelish, Sauger present (MRIS2002)

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this

101100011									
Estimated wetland area in AA subject to periodic flooding		≥ 10 acres		7	<10. >2.acres	,	≤2 acres		
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	(25-75%)	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1(H)	.9(H)	.6(M)	.8(H)	C.7(E)	.5(M)	.4(M)	.3(L)	.2(L)
AA contains unrestricted outlet	.9(H)	.8(H)	.5(M)	.7(H)	.6(M)	.4(M)	.3(L)	.2(L)	.1(L)

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle) (2) I Comments:

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, circle NA here and proceed with the evaluation.)

Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this
function. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see

instructions for further definitions of triese terris).									
Estimated maximum acre feet of water contained in wetlands/ within the AA that are subject to periodic flooding or ponding	,	>5 acre feet <5, >1 acre feet ≤1 acre fe							
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	(S/I)	T/E	P/P	S/I	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	1(H)	.9(H)	.8(H)	.8(H)	(M)ð.	.5(M)	.4(M)	.3(L)	.2(L)
Wetlands in AA flood or pond < 5 out of 10 years	.9(H)	.8(H)	.7(M)	.7(M)	.5(M)	.4(M)	.3(L)	.2(L)	.1(L)

### Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with the evaluation.)

Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Sediment, nutrient, and toxicant input levels within AA	deliver low or comp substantially	to moderate le ounds such th y impaired. Mir s or toxicants,	vels of sedime at other functi nor sedimental	tion, sources of	Waterbody on MDEQ list of waterbodies in need of TMDL development for "probable causes" related to sediment, nutrients, or toxicants or AA receives or surrounding land use with potential to deliver high levels of sediments, nutrients, or compounds such that other functions are substantially impaired. Major sedimentation, sources of nutrients or toxicants, or signs of eutrophication present.					
% cover of wetland vegetation in AA	27	70%)	<	70%	≥ 70		< 7	0%		
Evidence of flooding or ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No		
AA contains no or restricted outlet	(1(H)	.8 (H)	.7 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)		
AA contains unrestricted outlet	.9 (H)	.7 (M)	.6 (M)	.4 (M)	.4 (M)	.3 (L)	.2 (L)	.1 (L)		



14H Sediment/Shoreline Stabilization: (applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If does not apply, circle NA here and proceed to next function)

Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or t.

% Cover of wetland streambank or	Durator	of surface water adjacent to rooted ve	getation
shoreline by species with deep, binding rootmasses	permanent / perennial	seasonal / intermittent	Temporary / ephemeral
≥ 65%	1(H)	.9 (H)	.7 (M)
35-64%	(.7 (M))	.6 (M)	.5 (M)
< 35%	.3 (L)	.2 (L)	.1 (L)

141. Production Export/Food Chain Support:

 Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P = permanent/perennial; S/I = seasonal/intermittent; T/E /A= temporary/ephemeral or absent [see instructions for further definitions of these terms].)

Α		Vegeta	ted comp	ponent >	5 acres			Vegeta	ted comp	conent 1-	5 acres		Vegetated component <1 acre					
В	H	gh	Mod	erate	L	ow	H	gh	Mod	orate	Lo	W	H	gh	Mod	erate	Lo	OW.
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P/P	1H	.9H	(.9H	H8.	H8.	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	.6M	.4M	.4M	.3L
S/I	.9H	148	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.31.	.3L	.2L
T/E/	.8H	.7M	.7M	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	.21.	.2L	.1L
A	1				1		1											

#### Comments:

<ol> <li>Groundwater Discharge/Recharge: (Check the indicators in i.)</li> </ol>	ii below that apply to the AA)
i. Discharge Indicators	ii. Recharge Indicators
Springs are known or observed	Permeable substrate present without underlying impeding layer
Vegetation growing during dormant season/drought	Wetland contains inlet but no outlet
Wetland occurs at the toe of a natural slope	Other
XX Seeps are present at the wetland edge	
AA permanently flooded during drought periods	
Wetland contains an outlet, but no inlet	
> Other Alluvial flow	
iii. Rating: Use the information from i and ii above and the table below	to arrive at [circle] the functional points and rating [H = high, L = low] for this function.
Criteria	Functional Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/	present (1(H))

Criteria	Functional Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/R present	(1(H))
No Discharge/Recharge indicators present	.1(L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

### Comments:

### 14K. Uniqueness:

 Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function

Replacement potential	AA contains	fen, bog, warm	springs or	AA does no	ot contain pre	evicusly cited	AA does not contain previously			
	mature (>80	yr-old) forested	wetland or	rare types	and structu	ral diversity	cited rare types or associations			
	plant associ	ation listed as "	S1" by the		high or cont		and structural diversity (#13) is			
		MNHP		association I	isted as 'S2'	low-moderate				
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant	
Low disturbance at AA (#12i)	1 (H)	.9 (H)	.8 (H)	.8 (H)	.6 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	
Moderate disturbance at AA (#12i)	.9 (H)	.8 (H)	.7 (M)	.7 (M)	.5 (M)	.4 (M)	.4 (M)	(3(L))	.2 (L)	
High disturbance at AA (#12i)	.8 (H)	.7 (M)	.6 (M)	.6 (M)	.4 (M)	.3 (L)	.3 (L)	.2 (L)	.1 (L)	

### Comments:

14L. Recreation/Education Potential: I. Is the AA a known rec./ed. site: (circle Y N (If yes, rate as [circle] High [1] and go to ii; if no go to iii)
iii. Check categories that apply to the AA: X Educational/scientific study, X Consumptive rec. Non-consumptive rec.; Other
iii. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y N

(If yes, go to ii, then proceed to iv, if no, then rate as [circle] Low [0.1])

Rating (use the matrix below to arrive at forcief the functional points and rating (H = high, M = moderate, or L = low) for this function.

Ownership		Disturbance at AA (#12i)	
	low	moderate	high
public ownership	(1(H))	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)



### **FUNCTION & VALUE SUMMARY & OVERALL RATING**

Function & Value Variables	Rating	Actual Functional Points	Possible Function al Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	LOW	0.3	1	
B. MT Natural Heritage Program Species Habitat	MOD	0.6	1	
C. General Wildlife Habitat	A164	0.9	1	
D. General Fish/Aquatic Habitat	HIGH	0.9	1	
E. Flood Attenuation	HIGH	0.7	1	
F. Short and Long Term Surface Water Storage	MOD	0,6	1	
G. Sediment/Nutrient/Toxicant Removal	A164	1.	1	
H. Sediment/Shoreline Stabilization	MOD	0.7	1	
Production Export/Food Chain Support	HIGH	0.9	1	
J. Groundwater Discharge/Recharge	AlGH	1.	1	
K. Uniqueness	LOW	0.3	1	
L. Recreation/Education Potential	A16H	1.	1	
Totals:	N 50 10	8.9	12	4394 9499 93

74 %

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I

	_
_	ory I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, go to Category II) Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or Score of 1 functional point for Uniqueness; or Score of 1 functional point for Flood Attenuation and answer to Question 14E.ii is "yes"; or Total actual functional points > 80% (round to nearest whole #) of total possible functional points.
	ory II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to ory IV)  Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or Score of .9 or 1 functional point for General Wildlife Habitat; or Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or Score of .9 functional point for Uniqueness; or Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.
Categ	ory III Wetland: (Criteria for Categories I, II or IV not satisfied)
	gory IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy a go to Category III)  "Low" rating for Uniqueness; and  "Low" rating for Production Export/Food Chain Support; and  Total actual functional points < 30% (round to nearest whole #) of total possible functional points

1. Project Name: Big Spri	T Montana We	tland A	SSESS 2. Projec	ment	Form (revi	sed 5/25	(1999) Control #:_		
3. Evaluation Date: Mo. 08 D	ay 29 Yr. 01 4. E	Evaluator(s)	Bergh	nd/11	axler_s.wo	lands/Site #(	s) Narions L	ant-fri	nge_
6. Wetland Location(s): I, Legal II. Approx. Stationing or N	: T /5(Nor S; R /8 lileposts:	Exy:s	23	uln a	long Big	ors; R_C	eck.		;
iii. Watershed:	1 1 1 2 609	Poforonce			NA				
a. Evaluating Agency://// b. Purpose of Evaluation:     Wetlands potentially:     Mitigation wetlands;     3.	affected by MDT projectore-construction post-construction	t 9. As see ir	nstructions	t area: (A s on deter	A, tot., ac., mining AA)	(measu	y estimated) red, e.g. by GP _ (visually estim _ (measured, e	nated) .g. by GPS [i	f applies])
10. Classification of Wetland a	nd Aquatic Habitats I	n AA (HGM	according	to Brinse	on, first col.; USF	WS according	to Cowardin [19	979), remaini	ng cols.)
HGM Class	System		Subsyste	m		Class	Water Regime	Modifier	% of AA
Riverine	Palustrine					EM	SF	EX	10
	Rherhe		Ugpe	- qi	rennial	RB	H	EX	90
(Willows planke		Conside	red i	Jitha	herbac	eans la	ngo ( du	e 10	
Comments: 12. General condition of AA:	Inknown	Rare			Common	ed Basin, see	definitions) Abunda	nt	
Regarding disturbance     Conditions with		etermine [cir	rcle] appro	Predomi	ponse) nant conditions a	djacent to (with	hin 500 feet of)	AA	
		Land manag natural state; logged, or or does not con	is not graze	ninantly d, hayed, rerted;	Land not cultivated grazed or hayed or or has been subject contains few roads	but moderately selectively logged to minor clearing	Land cultivated subject to subs	f or heavily grazi stantial fill placer trological alterat	ment, grading.
AA occurs and is managed in predominar grazed, hayed, logged, or otherwise conve roads or occupied buildings.	*	low disturt	bance		low disturbance	•	moderate di	sturbance	
AA not cultivated, but moderately grazed of logged, or has been subject to relatively or placement, or hydrological alteration, cont	ninor clearing, filt	moderate	disturband	ce .	moderate distu	rbance	high disturb	ance	
AA cultivated or heavily grazed or logged, substantial fill placement, grading, clearin high road or building density.	subject to relatively	high distu	irbance		high disturband	e	high disturt	ance	
Comments: (types of distu	, & introduced specie	es (Includin	g those n	ot dome	sticated, feral): (	list) Smoo	in Drome	, ,	ne d
Bly Spring Creek.	ve summary of AA an Creek in clra dential Leivela	ome of	aing land AA WI + 2-10	use/habi unc d ne h	iat: Narrow Idjacont to Ishlau	Wetland O Wellan	ds.	alans	portin
13. Structural Diversity: (bases			ed classe:	present			classes (or	above) ≤ 1 vegetate	d class
# of "Cowardin" vegetated clas	ses present in AA (see	= #10)		-	s forested)	1 if forested		5 . regetate	
Rating (circle)		, ,		ligh		Moderate	(	Low )	
Willows	included in	Merba	<i>Word</i>	an	r, This	Will like	ely chan	ge our Time,	

# SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

		O.	01101	• • •	-111711				.00	w •	LULU		,							
Habitat for Federally     AA is Documented (D     Primary or critical hab	) or Sus	spected	(S) to 0	conta	ain (circ							nstr	octions):	:						
Secondary habitat (IIst Incidental habitat (IIst No usable habitat						B	ald e	2009	le			_			_					
II. Rating (use the concluthis function)	sions fr	om i ab	ove and	the	matrix t	pelow t	o arrive	at (c	ircle] th	e funct	tional po	ints	and rati	ng (H :	= high, N	M = r	moderat	e, or L	= low] fo	or
Highest Habitat Level		doc./pr	rimary		sus/prin	nary	doc./s	seco	ndary	sus	/second	lary	doc	./incide	ental	sus	/incider	ital	None	2
Functional Points and Ra	iting	1 (H)		1	.9 (H)		.8 (M	)		.7 (1	M)		.5 (1	L)		.3 (1	.)		0 (L)	
Sources for documented us	se (e.g.	observ	ations, r	eco	rds, etc)	:										7				
14B, Habitat for plant or a  AA is Documented (D Primary or critical hab Secondary habitat (Ilst Incidental habitat (Ilst No usable habitat  Rating (use the conclu-	o) or Sustitat (Ilst st specie specie	spected speci es) es)	d (S) to d	cont	ain (circ	le one	te of	n de	afinitions J	conta	ined in i	nstn	uctions)		=				= low] fo	or
this function)	T			Т			L	_					Τ		Т				Τ	_
Highest Habitat Level	-+	doc./pr	rimary	+	sus/prin	nary	doc./	seco	ondary	sus	/second	Jary		./incide	ericai	SUB	Acciden	icai	None	_
Functional Points and Ra Sources for documented u				_	.8 (H)		.7 (M	)		.6 (	M)		.2 (	L)	(	.1(			0 (L)	
Substantial (based on an observations of abundant wildlife sign presence of extremely interviews with local by observations of scatter common occurrence adequate adjacent up interviews with local by it. Wildlife habitat feature (L) rating. Structural diversity (see	y of the dant wike such a y limiting piologist: of the for ered wike of wildlift land for piologist: es (work raity is fin of the	following the following the sign of sources with the sources with the following from #1 AA (see	ng [check] or high tracks, at feature knowledge [check] oups or is such as ces knowledge m top to 3. For ces #10).	(k)): spe nest es n ge of (): ndiv sca ge of bott	cies divited the AA  iduals of the AA  iduals of the AA  tom, circle cover to breviation of A = al	ersity ( res, ga ble in t  r relati s, nest  cle app o be co	during a me trail the surro vely few structur propriate considere surface	spe spe AA	ceriod) c. ding area cies dur game tra attribute enly dis er durati	ring pe ails, etc is in m tribute	Low ( fev into	base v or i e to arse ervie ds ds	ed on ar no wildli no wildli adjacer ws with	ny of the fe obside signatuplatuplatuplatuplatuplatuplatuplatupl	ervation:  In nd food  piologist:  al (E), his  be withinent/peri	s du sour s wit gh (H in 20	h knowl i), mode % of ea	k use ; edge o	the AA	w
#13) Class cover distribution		Eve	n			Unev	ren	$\dashv$	_	Eve	n			Une	ven	-		Eve	<u></u>	_
(all vegetated classes)	P/P	Ca l	T/E	Α.	P/P	S/I	T/E	A	P/P	S/I	T/E	Α	P/P	SA	T/E	A	P/P	S/I	T/E	Г
Duration of surface water in ≥ 10% of AA	P/P	S/I	1/E	Α	PIP	5/1	1/2	^	PIP	5/1	1/2	^	F/F	3/1	176	1^		5/1	170	Ľ
Low disturbance at AA (see #12i)	E	E	E	н	E	E	н	Н	E	н	Н.	М	E	н	М	М	E	н	М	
Moderate disturbance	н	н	н	н	н	н	н	м	н	н	м	м	н	М	м	L	F	М	L	
at AA (see #12i) High disturbance at AA	м	м	м	L	м	м	L	L	М	м	L	L	М	L	L	L	L	L	L	-
(see #12i)	Щ.			١				Ļ												L

ili. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low) for this function)

Evidence of wildlife use (i)		Wildlife habitat feat	ures rating (ii)	
	Exceptional	High	Moderate	Low
Substantial	1 (E)	.9 (H)	.8 (H)	.7 (M)
Moderate	.9 (H)	(7 (M))	.5 (M)	.3 (L)
Minimal	.6 (M)	.4 (M)	.2 (L)	.1 (L)



14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Perm	nanent / Per	enpial	Seas	onal / Intern	nittent	Tem	porary / Ephe	emeral
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10–25%	(210%)	>25%	10-25%	<10%	>25%	10–25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	Н	Н	Н	М	М.	М	М
Shading – 50 to 75% of streambank or shoreline within AA contains rip, or wetland scrub-shrub or forested communities	Н	Н	M	M	М	М	М	L	L
Shading - < 50% of streambank or shoreline within AA contains rip. or wetland scrub-shrub or forested communities	Н	М	(M)	М	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in I above by one level [E = H, H = M, M = L, L = L]). Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired OSES" including cold or warm water fishery or aquatic life support?

Y

N

Modified habitat quality rating = (circle)

E

H

M

L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or I = low) for this function)

Types of fish known or suspected within AA		Modified Hab	oitat Quality (ii)	
suspected within AA	Exceptional	High	(Moderate)	Low
Native game fish	1 (E)	.9 (H)	(.7(M))	.5 (M)
Introduced game fish	.9 (H)	.8 (H)	. <del>0 (M)</del>	.4 (M)
Non-game fish	.7 (M)	.6 (M)	.5 (M)	.3 (L)
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)

comments: Sauger, MAn. While-fish present (MRIS 2002)

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function)

Turicular)									
Estimated wetland area in AA subject to periodic flooding		≥ 10 acres			10, >2 acres	s		≤2 acres	-
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	25-75%	<25%
AA contains no outlet or restricted outlet	1(H)	.9(H)	.6(M)	.8(H)	.7(H)	.5(M)	.4(M)	.3(L)	2(1)
AA contains unrestricted outlet	.9(H)	.8(H)	.5(M)	.7(H)	.6(M)	.4(M)	.3(L)	.2(L)	-1(L)

ii. Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle). Y

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, circle NA here and proceed with the evaluation.)

Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Abbreviations for surface water durations are as follows; P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instructions for further definitions of these terms].)

Estimated maximum acre feet of water contained in wetlands within the AA that are subject to periodic flooding or ponding		>5 acre fee	1	<5	, >1 acre fe	et		1 acre foot	
Duration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	SI	T/E
Wetlands in AA flood or pond ≥ 5 out of 10 years	1(H)	.9(H)	.8(H)	.8(H)	.6(M)	.5(M)	.4(M)	(3(L))	.2(L)
Wetlands in AA flood or pond < 5 out of 10 years	.9(H)	.8(H)	.7(M)	.7(M)	.5(M)	.4(M)	.3(L)	-2(L)	.1(L)

## Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with the evaluation.)

Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Sediment, nutrient, and toxicant input levels within AA	deliver low or comp substantiall	to moderate le counds such the y impaired. Mis s or toxicants,	evels of sedim nat other funct nor sedimenta	tion, sources of	Waterbody on Mi development for nutrients, or toxic use with poten nutrients, or co substantially imp	"probable caus ants or AA rece tial to deliver his mpounds such	es" related to eives or surrough levels of se that other fund	sediment, unding land diments, ctions are
% cover of wetland vegetation in AA	> 7	70%		70%	nutrients or toxic ≥ 70°			on present. 70%
Evidence of flooding or ponding in AA	Yes	No	Yes	No	Yes	No	Yes	No
AA contains no or restricted outlet	1 (H)	.8 (H)	.7(44)	.5 (M)	.5 (M)	.4 (M)	.3 (L)	.2 (L)
AA contains unrestricted outlet	.9 (H)							

14H Sediment/Shoreline Stabilization: (applies only if AA occurs on or within the banks or a river, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If does not apply, circle NA here and proceed to next function)

Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L.

% Cover of wetland streambank or	Duration	of surface water adjacent to rooted ve	getation
shoreline by species with deep, binding rootmasses	(permanent / perennial)	seasonal / intermittent	Temporary / ephemeral
> 65%	1(H)_	.9 (H)	.7 (M)
35-64%	(.7 (M) )	.6 (M)	.5 (M)
< 35%	.3(L)	.2 (L)	.1 (L)

Comments: once better established Shrubs 14I. Production Export/Food Chain Support:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P = permanent/perennial; S/I = seasonal/intermittent;

T/E /A= temporary/ephemeral or absent [see instructions for further definitions of these terms].) Vegetated component 1-5 acres Vegetated component >5 acres Vegetated component <1 acre High В Moderate High Moderate Moderate High No C No No Yes No Yes No Yes Nο Yes No Yes Yes Yes No Yes No P/P .9H .9H 8H 8H .7M .9H .8H .8H 7M 7M .6M 7M 6M 6M 4M .4M 31 1H 5M S/I .9H 8H .8H 7M 7M 6M .8H 7M .7M **6M** .6M .5M .6M 21 .8H .6M .6M .5M .7M .6M .6M .5M .5M .4M .5M .4M 2L 2L .1L T/E .7M .7M .4M

#### Comments:

14J. Groundwater Discharge/Recharge: (Check the indicators in i & i	i below that apply to the AA)
i. Discharge Indicators	II. Recharge Indicators
Springs are known or observed	Permeable substrate present without underlying impeding layer
Vegetation growing during dormant season/drought	Wetland contains inlet but no outlet
Wetland occurs at the toe of a natural slope	Other
Seeps are present at the wetland edge	
AA permanently flooded during drought periods	
Wetland contains anyoutlet, but no inlet	
Other Allaviol flow	
	to arrive at [circle] the functional points and rating [H = high, L = low] for this function.

Criteria	Functional Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/R present	1 (H)
No Discharge/Recharge indicators present	.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

### Comments:

14K. Uniqueness:

Rating (working from top to bottom, use the matrix below to arrive at (circle) the functional points and rating [H = high, M = moderate, or L = low) for this

TUTICUOTI.											
Replacement potential	AA contains for	en, bog, warm	springs or	AA does no	ot contain pre	eviously cited	AA does not contain previously				
	mature (>80 y	r-old) forested	wetland or	rare types	and structu	ral diversity	cited rare types or associations				
	plant associa	tion listed as *	S1" by the	(#13) is	high or cont	ains plant	and str	actural diven	sity (#13) is		
10000 100 20	l .	MNHP		association I	isted as "S2"	by the MNHP	low-moderate				
Estimated relative abundance (#11)	rare	common	abundant	rare	common	abundant	rare	common	abundant		
Low disturbance at AA (#12i)	1 (H)	.9 (H)	.8 (H)	.8 (H)	.6 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)		
Moderate disturbance at AA (#12i)	.9 (H)	.8 (H)	.7 (M)	.7 (M)	.5 (M)	.4 (M)	.4 (M)	.3(L)	.2 (L)		
High disturbance at AA (#12i)	.8 (H)	.7 (M)	.6 (M)	.6 (M)	.4 (M)	.3 (L)	.3 (L)	.2 (L)	.1 (L)		

### Comments:

14L. Recreation/Education Potential: I. Is the AA a known rec./ed. site: (circle Y N (If yes, rate as [circle] High [1] and go to ii; if no go to iii) Check categories that apply to the AA: X Educational/scientific study; Consumptive rec.; Non-consumptive rec.; Other

III. Based on the location, diversity, size, and other site attributes, is there strong potential for rec./ed. use? Y N (If yes, go to ii, then proceed to iv, if no, then rate as [circle] Low [0.1])

iv. Rating (use the matrix below to arrive at fcircle) the functional points and rating [H = high, M = moderate, or L = low) for this function.

Ownership		Disturbance at AA (#12i)	
	toni	moderate	high
public ownership	(1 (H))	.5 (M)	.2 (L)
private ownership	.7 (M)	.3 (L)	.1 (L)

comments: Fishing, Established park, school neorby,



# **FUNCTION & VALUE SUMMARY & OVERALL RATING**

Function & Value Variables	Rating	Actual Functional Points	Possible Function al Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	LOW	0.3	1	
B. MT Natural Heritage Program Species Habitat	LOW	0.1	1	
C. General Wildlife Habitat	MOD	0.7	1	
D. General Fish/Aquatic Habitat	MaD	0.7	1	
E. Flood Attenuation	Low	0.2	1	
F. Short and Long Term Surface Water Storage	LOW	0.3	1	
G. Sediment/Nutrient/Toxicant Removal	MOD	0.6	1	
H. Sediment/Shoreline Stabilization	MOD	0.7	)	
Production Export/Food Chain Support	Mas	0.4	1	
J. Groundwater Discharge/Recharge	H164	1.	1	
K. Uniqueness	LOW	0.3	1	
L. Recreation/Education Potential	A16+1	J.	1	
Totals:		5.3	12	

44%

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below)

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	<u> </u>
Categ	gory I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, go to Category II)  Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or  Score of 1 functional point for Uniqueness; or  Score of 1 functional point for Flood Attenuation and answer to Question 14E.ii is "yes"; or  Total actual functional points > 80% (round to nearest whole #) of total possible functional points.
	gory II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to gory IV)  Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or Score of .9 or 1 functional point for General Wildlife Habitat; or Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or "High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or Score of .9 functional point for Uniqueness; or Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.
Categ	gory III Wetland: (Criteria for Categories I, II or IV not satisfied)
	gory IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy a go to Category III)  "Low" rating for Uniqueness; and "Low" rating for Production Export/Food Chain Support; and Total actual functional points < 30% (round to nearest whole #) of total possible functional points



			_ 2, Project #:			Control #:_		
3. Evaluation Date: Mo. OS Da	sy29 Yr.O] 4. E	Evaluator(	s): Bergland /	Taxler 5. wor	lands/Site	(s) 5 "isola 6 de males	ded dep	ureion?
6. Wetland Location(s): I. Legal: II. Approx. Stationing or Mi	T/5(Nors; R/8	Pory:	s 23 Lewistown	along Big	ors; R Spray C	E or W; S	nbend" ai	ra.
iii. Watershed: 1004 Other Location Information			ce No. (if applies):	NA				
7. a. Evaluating Agency: NPT b. Purpose of Evaluation: 1. Wetlands potentially a 2. Mitigation wetlands; p 3. Mitigation wetlands; p 4. Other  10. Classification of Wetland ar	ffected by MDT project re-construction lost-construction	t 9. A see	Vetland size: (total	AA, tot., ac., ermining AA)	((meas		nated) .g. by GPS [i	f applies])
HGM Class	System System	n AA (HGI	Subsystem	son, first col., USF	Class	Water Regime	Modifier	% of AA
Riverine	Palustrine		_		EM	С	-	100
					-			
								ļ
11. Estimated relative abundance (Circle one) Un	an (of almited along)				s, Lacustrine Fri	nge		(j), Diked
Comments:	iknown	ied sites w Rar					nt	(j), Dixed
Comments:  12. General condition of AA:	known	Rar	re	Montana Watersh Common		e definitions)	nt	(j), Diked
Comments:	(use matrix below to d	Rar	circle) appropriate re	Montana Watersh Common sponse)	ed Basin, se	e definitions) Abundar ithin 500 feet of)	AA	
Comments:  12. General condition of AA:  I. Regarding disturbance:	(use matrix below to d	etermine of	circle) appropriate re	Montana Watersh Common	ijacent to (w but moderately selectively logg	Abundar  Abundar  ithin 500 feet of)  Land cultivated of; subject to subs	AA or heavily graze itantial fill placen frological alterati	ed or logged; nent, grading.
Comments:  12. General condition of AA:  I. Regarding disturbance:  Conditions within  AA occurs and is managed in predominantly grazed, hayed, logged, or otherwise convert roads or occupied buildings.	(use matrix below to do	etermine [c	circle] appropriate re  Predon saged in predominantly te; is not grazed, hayed, otherwise converted; ontain roads or buildings urbance	sponse) ninant conditions ac Land not cultivated, grazed or hayed or or has been subject contains few roads low disturbance	diacent to (w but moderately selectively loggi to minor cleans or buildings.	Abundar  Abu	AA I or heavily graze stantial fill placen trelogical alterati sity	ed or logged; nent, grading.
Comments:  12. General condition of AA:  I. Regarding disturbance:  Conditions within  AA occurs and is managed in predominantly grazed, hayed, logged, or otherwise convert roads or occupied buildings.  AA not cultivated, but moderately grazed or logged, or has been subject to relatively mir placement, or hydrological alteration; contail	(use matrix below to di AA  y natural state, is not led; does not contain hayed or selectively nor clearing, fill ins few roads or buildings.	etermine [c	circle] appropriate re  Predon aged in predominantly te; is not grazed, hayed, otherwise converted; ontain roads or buildings urbance e disturbance	sponse) ninant conditions ac Land not cultivated, grazed or hayed or or has been subject contains few roads low disturbance moderate distur	Jacent to (w but moderately selectively logg to minor clearie or buildings.	ithin 500 feet of)  Land cultivated subject to subsclearing, or hyd or building dan moderate di	AA I or heavily graze Itantial fill placen Irological alterati sibv sturbance	ed or logged; nent, grading.
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Comments:  12. General condition of AA:  I. Regarding disturbance:  Conditions within  AA occurs and is managed in predominantly grazed, hayed, logged, or otherwise convert roads or occupied buildings.  AA not cultivated, but moderately grazed or logged, or has been subject to relatively mir placement, or hydrological alteration; contail AA cultivated or heavily grazed or logged; si substantial fill placement, grading, clearing, high road or building density.  Comments: (types of disturt II. Prominent weedy, alien,	(use matrix below to de AA  y natural state, is not led; does not contain hayed or selectively nor clearing, fill ins few roads or buildings, ubject to relatively or hydrological alteration; pance, intensity, seaso & introduced species	etermine [c  Land man natural stat logged, or does not or low distu  moderate high dist	circle) appropriate re  Predon saged in predominantly te; is not grazed, hayed, otherwise converted; ontain roads or buildings urbance turbance  Esternical Rer ng those not domi	sponse)  sponse)  sinant conditions according for hayed or or hayed or or hayed or or has been subject contains few roads  low disturbance moderate disturbance or hayed or or	djecent to (w but moderately selectively logg to minor cleans or buildings.	ithin 500 feet of)  Land cutivated subject to subsclearing, or hydroderate did high disturb high disturb	AA I or heavily graze Itantial fill placen Irelogical alterati sity ance ance	ed or logged; ment, grading, on; high road
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AA occurs and is managed in predominants grazed, hayed, logged, or otherwise convert roads or occupied buildings.  AA not cultivated, but moderately grazed or logged, or has been subject to relatively min placement, or hydrological alteration; contain AA cultivated or heavily grazed or logged; substantial fill placement, grading, clearing, high road or building density.  Comments: (types of disturt ii. Prominent weedy, allen,	y natural state; is not led; does not contain hayed or selectively nor clearing, fill ins few roads or buildings, ubject to relatively, or hydrological alteration; bance, intensity, seaso & introduced species a summary of AA and E. of 5!!le Halk	etermine [c  Land man natural sta logged, or does not or low distu  moderate high dist  n, etc.): s (Includi d surroun	circle) appropriate re  Predon  aged in predominantly te; is not grazed, hayed, otherwise converted; ontain reads or buildings urbance  e disturbance  curbance  curbance  curbance  curbance  curbance  curbance  curbance  curbance  curbance	Sponse)  sponse)  sinant conditions according for hayed or or has been subject contains few roads low disturbance moderate disturbance according for hayed or or has been subject contains few roads low disturbance moderate disturbance according for high disturbance for high disturbance according for high disturbance for hig	djecent to (w but moderately selectively logg to minor clearie or buildings.	thin 500 feet of)  Abundar  thin 500 feet of)  Land cultivated subject to subsclearing, or hyd clearing or hyd clearing to high disturb high disturb  A low of brome  1551 on 5 W	AA  or heavily graze stantial fill placen frelegical alterati sity ance ance frelegical stration ance ance ance	ed or logged; ment, grading, on; high road
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# SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

14A. Habitat for Federally																				
<ol> <li>AA is Documented (D)         Primary or critical habit             Secondary habitat (list             Incidental habitat (list s             No usable habitat     </li> </ol>	at (list specie	speci		1 1 1	ain (circ DS DS DS	le one	based o	on de	efinitions	contai	ned in i	nstru	ctions):		_					
II. Rating (use the conclus	ions fro	om i ab	oove and		$\smile$	below t	to arrive	at [c	ircle] th	e funct	ional po	ints :	and rati	ng [H =	high, N	M = n	noderat	e, or L	= low] f	or
this function)				_			_			T									Ι	
Highest Habitat Level		doc./pr	rimary	1	sus/prin	nary	doc./	seco	ondary	sus	/second	dary	doc	/incide	ntal	sus.	/incider	ntal	Noo	-
Functional Points and Rati Sources for documented use			rations, r		.9 (H) rds, etc)	):	.8 (N	1)		.7 (1	M)		.5 (1	_)		.3 (L	.)		(G(r)	)
14B. Habitat for plant or a  1. AA is Documented (D) Primary or critical habit Secondary habitat (IIst Incidental habitat (IIst No usable habitat  II. Rating (use the conclus)	or Sus tat (list t specie specie	spected speci es) s)	d (S) to o	cont	ain (circ	ile one	based o	po de	ofinitions I	conta	ined in i	nstru	uctions)		=				= low) f	for
this function)		dee to		Т	a va fa da		1		nadan:	Τ	4	dan:	7	/incide	ntal	0110	Ancider	atal	Mon	
Highest Habitat Level		doc./p	nmary	7	sus/prin	nary			ondary		/second	Jany	1		TILES (		1	ıtas	None	
Functional Points and Rat Sources for documented us			ations.		.8 (H)	):	.7 (N	1)		.6 (	M)		.2 (	-)	i	10	. <u>'</u>		0 (L)	
14C. General Wildlife Hab I. Evidence of overall wild Substantial (based on any observations of abunda abundant wildlife sign of the sign	of the ant wild such as limiting ologists of the fored wild from the foliogists ologists ologists.	following the fo	ng [checks or high tracks, at feature knowleds [check] pups or such as ces knowled	ck]): spe nest es n ge o' ]): indiv	ecies div t structu ot availa f the AA riduals o at, tracks	ersity ( res, ga able in t or relati s, nest	(during a arne trail the surr wely few structu	speres,	period) c. ding area cies du game tra	ing pe	Low ( fev littl spi inte	base v or r e to arse ervier	ed on ar no wildli no wildl adjacer ws with	ny of the fe obse fe sign at uplar local b	ervations ad food iologists	s dur sour s with	h knowl	k use p	the A	
(L) rating. Structural divers of their percent composition seasonal/intermittent; T/E =	sity is fr	om #1 AA (se	3. For one #10).	ass Abi	s cover t breviation d A = al	o be o	onsidere surface	ed ev	enly dis er durat	tribute ons an	d, veget e as foll definition	ated ows: ons o	classes P/P = p f these	must erman	be withi ent/per	in 20	% of ea	ch othe	er in ten	ms
Structural diversity (see #13)				Hi	gn						-	Mode	rate					CLOW		
Class cover distribution (all vegetated classes)		Eve	n			Unev	en			Eve	n			Unev	en			Eve	シ	
Duration of surface	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/I	T/E	Α	P/P	S/1)	T/E	A
water in ≥ 10% of AA  Low disturbance at AA	E	E	E	н	E	E	Н	н	E	н	н	M	E	н	м	м	E	н	M	M

Class cover distribution		Ev€	ก			Unev	ven			Eve	n			Unev	<i>r</i> en		ı	Eve	יש	- 1
(all vegetated classes)																_		=		
Duration of surface water in ≥ 10% of AA	P/P	\$/I	T/E	A	P/P	S/I	T/E	^	P/P	S/I	T/E	A	P/P	S/I	T/E	^	P/P	(S/I)	T/E	Α
Low disturbance at AA (see #12i)	E	E	E	н	E	E	Н	H	E	н	н	M	E	н	М	М	E	H	M	M
Moderate disturbance at AA (see #12i)	н	Н	н	Н	Н	Н	Н	M	н	н	М	М	н	М	M	L	Н	$\odot$	L	L
High disturbance at AA	М	М	М	L	M	M	L	L	M	M	L	L	М	L	L	L	L	L	L	L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L = low] for this function)

Evidence of wildlife use (i)	Wildlife habitat features rating (ii)											
	Exceptional	High	(Moderate)	Low								
Substantial	1 (E)	.9 (H)	(H) 8.	.7 (M)								
Moderate	.9 (H)	.7 (M)	(.5 (M))	.3 (L)								
Minimal	.6 (M)	.4 (M)	-2(L)	.1 (L)								



14D. General Fish/Aquatic Habitat Rating: (Assess this function if the AA is used by fish or the existing situation is "correctable" such that the AA could be used by fish [i.e., fish use is precluded by perched culvert or other barrier, etc.]. If the AA is not or was not historically used by fish due to lack of habitat, excessive gradient, etc., circle NA here and proceed to the next function. If fish use occurs in the AA but is not desired from a resource management perspective [such as fish use within an irrigation canal], then Habitat Quality [i below] should be marked as "Low", applied accordingly in ii below, and noted in the comments.)

Habitat Quality (circle appropriate AA attributes in matrix to arrive at exceptional (E), high (H), moderate (M), or low (L) quality rating.

Duration of surface water in AA	Perm	anent / Pere	ennial	Seas	onal / Intern	nittent	Tem	porary / Ephe	meral
Cover - % of waterbody in AA containing cover objects such as submerged logs, large rocks & boulders, overhanging banks, floating-leaved vegetation, etc.	>25%	10-25%	<10%	>25%	10-25%	<10%	>25%	10-25%	<10%
Shading - >75% of streambank or shoreline within AA contains riparian or wetland scrub-shrub or forested communities	E	E	н	н	Н	М	М	M	M
Shading – 50 to 75% of streambank or shoreline within AA contains rip, or wetland scrub-shrub or forested communities	н	н	М	М	М	М	М	L	L
Shading - < 50% of streambank or shoreline within AA contains rip, or wetland scrub-shrub or forested communities	н	М	M	М	L	L	L	L	L

ii. Modified Habitat Quality (Circle the appropriate response to the following question. If answer is Y, then reduce rating in I above by one level [E = H, H = M, M = L, L = L]). Is fish use of the AA precluded or significantly reduced by a culvert, dike, or other man-made structure or activity or is the waterbody included on the MDEQ list of waterbodies in need of TMDL development with listed "Probable Impaired Uses" including cold or warm water fishery or aquatic life support?

Y

N

Modified habitat quality rating = (circle)

E

H

M

L

iii. Rating (use the conclusions from i and ii above and the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M =

moderate, or L = low) for this function)

Types of fish known or	Modified Habitet Quality (ii)							
suspected within AA	Exceptional	High	Moderate	Low				
Native game fish	1 (E)	.9 (H)	.7 (M)	.5 (M)				
Introduced game fish	.9 (H)	.8 (H)	.6 (M)	.4 (M)				
Non-game fish	.7 (M)	.6 (M)	.5 (M)	.3 (L)				
No fish	.5 (M)	.3 (L)	.2 (L)	.1 (L)				

Comments: A/A

14E. Flood Attenuation: (applies only to wetlands subject to flooding via in-channel or overbank flow. If wetlands in AA are not flooded from in-channel or overbank flow, circle NA here and proceed to next function.)

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this

function)								$\sim$	
Estimated wetland area in AA subject to periodic flooding	≥ 10 acres				<10, >2 acre	\$		≤2 acres	
% of flooded wetland classified as forested, scrub/shrub, or both	75%	25-75%	<25%	75%	25-75%	<25%	75%	23-75%	25%
AA contains no outlet or restricted outlet	1(H)	.9(H)	.6(M)	.8(H)	.7(H)	.5(M)	.4(M)	.3(L)	(2(L))
AA contains unrestricted outlet	.9(H)	.8(H)	.5(M)	.7(H)	.6(M)	.4(M)	.3(L)	.2(L)	.1(L)

Are residences, businesses, or other features which may be significantly damaged by floods located within 0.5 miles downstream of the AA (circle).

N (Y)(ek

14F. Short and Long Term Surface Water Storage: (Applies to wetlands that flood or pond from overbank or in-channel flow, precipitation, upland surface flow, or groundwater flow. If no wetlands in the AA are subject to flooding or ponding, circle NA here and proceed with the evaluation.)

Rating (working from top to bottom, use the matrix below to arrive at (circle) the functional points and rating [H = high, M = moderate, or L = low) for this function. Abbreviations for surface water durations are as follows: P/P = permanent/perennial; S/I = seasonal/intermittent; and T/E = temporary/ephemeral [see instanctions for further definitions of these terms].

1119	adduction for total or delinitions of these territory										
	timated maximum acre feet of water contained in wetlands	>5 acre feet			<5	, >1 acre fe	et	≤1 acre foot			
wit	hin the AA that are subject to periodic flooding or ponding										
	ration of surface water at wetlands within the AA	P/P	S/I	T/E	P/P	S/I	T/E	P/P	(SA)	T/E	
W	etlands in AA flood or pond ≥ 5 out of 10 years	1(H)	.9(H)	.8(H)	.8(H)	.6(M)	.5(M)	.4(M)	(3(L))	.2(L)	
W	etlands in AA flood or cond < 5 out of 10 years	.9(H)	.8(H)	.7(M)	.7(M)	.5(M)	.4(M)	.3(L)		.1(L)	

### Comments:

14G. Sediment/Nutrient/Toxicant Retention and Removal: (Applies to wetlands with potential to receive excess sediments, nutrients, or toxicants through influx of surface or ground water or direct input. If no wetlands in the AA are subject to such input, circle NA here and proceed with the evaluation.)

Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Sediment, nutrient, and toxicant input levels within AA	deliver low or com substantial	to moderate le pounds such the ly impaired. Mints or toxicants,	ing land use we evels of sedime hat other functi nor sedimentat , or signs of eu esent.	ints, nutrients, ons are not ion, sources of	nutrients, or toxi use with poter nutrients, or co substantially im	r "probable caus	es" related to gives or surrough levels of se that other fundimentation,	sediment, unding land adiments, ctions are sources of
% cover of wetland vegetation in AA		70%	<	70%	≥ 70		< 70%	
Evidence of flooding or ponding in AA	(Yes)	No	Yes	No	Yes	No	Yes	No_
AA contains no or restricted outlet	(1 (H) .8 (H) .7 (M) .5 (M)			.5 (M)	.4 (M)	.3 (L)	.2 (L)	
AA contains unrestricted outlet	9(H) .7 (M) .6 (M) .4 (M) .4					.3 (L)	.2 (L)	

Subsurface

14H Sediment/Shoreline Stabilization: (applies only if AA occurs on or within the banks or a fiver, stream, or other natural or man-made drainage, or on the shoreline of a standing water body which is subject to wave action. If does not apply, circle NA here and proceed to next function)

1. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [E = exceptional, H = high, M = moderate, or L

% Cover of wetland streambank or	Duration of surface water adjacent to rooted vegetation						
shoreline by species with deep, binding rootmasses	permanent / perennial	seasonal / intermittent	Temporary / ephemeral				
≥ 65%	1 (H)	.9 (H)	.7 (M)				
35-64%	.7 (M)	.6 (M)	.5 (M)				
< 35%	.3 (L)	.2 (L)	.1 (L)				

Comments: 1//

14l. Production Export/Food Chain Support:

Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function. Factor A = acreage of vegetated component in the AA; Factor B = structural diversity rating from #13; Factor C = whether or not the AA contains a surface or subsurface outlet; the final three rows pertain to duration of surface water in the AA, where P/P = permanent/perennial; S/I = seasonal/intermittent;

I/E /A	≕ tempor	rary/epne	merai or	absent	see inst	ructions t	or tunine	r oennu	ons or un	ese term	SJ.)							<del>}</del>
A		Vegetated component >5 acres Vegetated component 1-5 acres Vegetated component <1 acres						Vegetated component 1-5 acres				1 acre	_					
В	Hi	gh	Mod	erate	L	ow	H	gh	Mode	erate	Lo	w	H	gh	MOOR	erate	210	M.
C	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No (	Yes '	No
P/P	1H	.9H	.9H	H8.	.8H	.7M	.9H	.8H	.8H	.7M	.7M	.6M	.7M	.6M	6M	.4M /	414	.3L_
S/I	.9H	.8H	.8H	.7M	.7M	.6M	.8H	.7M	.7M	.6M	.6M	.5M	.6M	.5M	.5M	.31/	3L	2L
T/E/	.8H	.7M	.7M	.6M	.6M	.5M	.7M	.6M	.6M	.5M	.5M	.4M	.5M	.4M	.4M	/ZL	.2L	.1L
Α							1		1							/		

#### Comments:

14J. Groundwater Discharge/Recharge: (Check the indicators in i & ii	below that apply to I	he AA)	
I. Discharge Indicators	li. Recharge India		
Springs are known or observed		strate present without underlying	ng impeding layer
Vegetation growing during dormant season/drought		ns inlet but no outlet	
Wetland occurs at the toe of a natural slope	Other		
Seeps are present at the wetland edge			
AA permanently flooded during drought periods			
Wetland contains an outlet, but no inlet			
Xother Allavial flow			
iii. Rating: Use the information from i and ii above and the table below to	arrive at [circle] the	functional points and rating [F	i = high, L = low] for this function.
Criteria		Functional I	Points and Rating
AA is known Discharge/Recharge area or one or more indicators of D/R p	present		1 (H)

AA is known Discharge/Recharge area or one or more indicators of D/R present	(1 (H))
No Discharge/Recharge indicators present	.1 (L)
Available Discharge/Recharge information inadequate to rate AA D/R potential	N/A (Unknown)

### Comments:

14K. Uniqueness:

i. Rating (working from top to bottom, use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function

Replacement potential	AA contains fen, bog, warm springs or mature (>80 yr-old) forested wetland or plant association listed as "S1" by the			rare types (#13) is	and structu high or cont	ains plant	AA does not contain previously cited rare types or associations and structural diversity (#13) is low-moderate		
Estimated relative abundance (#11)	rare	common	abundant	rare	common	by the MNHP abundant	rare	common	abundant
Low disturbance at AA (#12i)	1 (H)	.9 (H)	.8 (H)	.8 (H)	.6 (M)	.5 (M)	.5 (M)	.4 (M)	.3 (L)
Moderate disturbance at AA (#12i)	.9 (H)	.8 (H)	.7 (M)	.7 (M)	.5 (M)	.4 (M)	.4 (M)	(3(L))	.2 (L)
High disturbance at AA (#12i)	.8 (H)	.7 (M)	.6 (M)	.6 (M)	.4 (M)	.3 (L)	.3 (L)	.2 (L)	.1 (L)

### Comments:

14L. Recreation/Education Potential: i. Is the	AA - Il tod -ites (circle) V	LAL Difuse sets on toi	role) High [1] and an to ii: if	no ao to iii)
14L. Recreation/Education Potential: i. is the	AA a known rec./eg. site: (circle) t	VIN All yes, rate as [CI	rciej migri [1] and go to ii, ii	no go to m
11 At t	A. The cost and to at out if a abush a	Concumption roc:	Mon-consumptive rec	Other

Check categories that apply to the AA: XX Educational/scientific study; \_\_\_ Consumptive rec.; \_\_\_ Non-consumptive rec.; \_\_\_ Non-consump

Rating (use the matrix below to arrive at [circle] the functional points and rating [H = high, M = moderate, or L = low] for this function.

Ownership	to diffe at ferrore are removed points	Disturbance at AA (#12i)							
	low	moderate	high						
(public ownership )	1 (H)	(.5 (M)	.2 (L)						
private ownership	.7 (M)	.3 (L)	.1 (L)						

comments: School nearby, public site, moderate potential for study of wellows development.

# **FUNCTION & VALUE SUMMARY & OVERALL RATING**

Function & Value Variables	Rating	Actual Functional Points	Possible Function al Points	Functional Units; (Actual Points x Estimated AA Acreage)
A. Listed/Proposed T&E Species Habitat	LOW	0.0	1	
B. MT Natural Heritage Program Species Habitat	Low	0.1	1	
C. General Wildlife Habitat	MOD	0.5	1	-
D. General Fish/Aquatic Habitat	NA	-	_	
E. Flood Attenuation	Low	0.2	1	
F. Short and Long Term Surface Water Storage	LOW	0.3	1	
G. Sediment/Nutrient/Toxicant Removal	AlGH	1.	1	
H. Sediment/Shoreline Stabilization	NA	<u> </u>		
Production Export/Food Chain Support	LOW	0.3	1	
J. Groundwater Discharge/Recharge	#164	1 .	1	
K. Uniqueness	LOW	0.3	1	
L. Recreation/Education Potential	maD	0.5	1	
Totals:		4.2	10	

42%

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I II (III ) IV

Categ	gory I Wetland: (Must satisfy one of the following criteria; if does not meet criteria, go to Category II)
	Score of 1 functional point for Listed/Proposed Threatened or Endangered Species; or Score of 1 functional point for Uniqueness; or
_	Score of 1 functional point for Flood Attenuation and answer to Question 14E.ii is "yes"; or
	Total actual functional points > 80% (round to nearest whole #) of total possible functional points.
	gory II Wetland: (Criteria for Category I not satisfied and meets any one of the following criteria; if not satisfied, go to gory IV)
outog	Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or
	Score of .9 or 1 functional point for General Wildlife Habitat; or
	Score of .9 or 1 functional point for General Fish/Aquatic Habitat; or
_	"High" to "Exceptional" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or
	Score of .9 functional point for Uniqueness; or
	Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.
Cate	gory III Wetland: (Criteria for Categories I, II or IV not satisfied)
Cate	gory IV Wetland: (Criteria for Categories I or II are not satisfied and all of the following criteria are met; if does not satisfy
	a go to Category III)
$\mathbf{X}\!\!\mathbf{X}$	"Low" rating for Uniqueness; and
XX	"Low" rating for Production Export/Food Chain Support; and
-	Total actual functional points < 30% (round to nearest whole #) of total possible functional points

### DATA FORM **ROUTINE WETLAND**

(1987 COE Wetlands Delineation Manual)

Project/Site: Big Spring Creak Applicant/Owner: Montana Department of Investigators: Traider / Berglund	f Transportati	on .	Pro	oject No: Task 29	County:	Monfana	
Do Normal Circumstances exist on the si is the site significantly disturbed (Atypical is the area a potential Problem Area? (If needed, explain on the reverse side)	Situation:)?	, 3	Yes No Yes No Yes No	Community ID: Transect ID: Field Location: E of stream, S.	EM/SS NA portion (pre-exist	)	
VEGETATION		The second second	tegion No. 9	And in case of the last of the		-	-
Dominant Plant Species(Latin/Common)				cles(Latin/Comm	ori)	Stratum	
Salix amygdaloides	Shrub	FACW	Rumex ori			Herb	FACW
Willow, Peach-Leaf			Dock Curly				
Salix exigua	Shrub	OBL		ta syzigachne		Herti	OBL.
Willow, Sandber			Sloughgran	ss,American			
Agrostis alba	Herb	FACW	Glycymhizi	i lepidota		Herb	FAC+
Redtop			Liconics.Ar	merican			1
Menthe arvensis	Herb	FAC	Cirsium an	Vense		Herb	FACU+
Mint, Field			Thistie, Cre	eping			L
Typha latifolia	Herb	OBL	Juneus en	sifolius		Herb	FACW
Catteil, Broad-Leaf			Rush, Thre	e-Stamen			
Calamagrostis inexpansa	Herb	FACW					T
Small-Readgrass, Nerrow-Spike							
	$\exists$		-			$\exists$	T
		1				1	
Percent of Dominant Species that are OB (excluding FAC-) 10/11 = 90.91%	SL, FACW or	FAC:	FAC No Numeri		= 88.89% 11 = 2.09		
Remarks:							***
HYDROLOGY							
YES Recorded Data(Describe in Rema NO Stream, Lake or Tide Gauss YES Aerial Photographs NO No Recorded Data Field Observations Depth of Surface Water: Depth to Free Water in Pit: Depth to Saturated Soil:			Primary ind NO in YES S NO W NO D NO S Secondary YES O NO W NO L YES F.	logy Indicators dicators undated aturated in Uppe later Marks rift Lines edinent Deposit rainage Patterns r Indicators xidized Root Ch later-Stained Les AC-Neutral Test ther(Explain in R	s In Wetlands annels in Upper aves Deta	12 Inches	
Remarks:		<del></del>				***************************************	



### DATA FORM **ROUTINE WETLAND**

(1987 COE Wetlands Delineation Manual)

SOILS	ors: Tri	oder/Benglund			on a copy of the last	Plot RD: 1
Map Unit Map Symi	ool: 83 y (Subgraup	s and Phase); Drainage Class; i); Cumulic Haplob		Mapp	ed Hydric Inc rvations Con	lusion? firm Mapped Type? Yes
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast	Tarter Co	ncretions, Structure, etc
8	В	10YR3/1	N/A	N/A N/A	Sitioam	increase, december as
8	В	10 <b>YR3/2</b>	10YR4/6	Common Distinct	Sit learn	
		Moisture Regime cing Conditions		NO Listed on Local NO Listed on Nation		
	YES Glaye	d or Low Chroma	ing the second s	NO Other (Explain)	n Remarks)	NOS CONTROL DE SENTENCIA DE SEN
WETLAND Hydrophyl Wetland H	YES Glaye	d or Low Chroma  VATION  Present? (Yes	No No	NO Other (Explain I	n Remarks)	

Wedferm\*\* Page 2 of 2 Page 1 of 2 WedFerm\*\*

### DATA FORM ROUTINE WETLAND

(1987 COE Wetlands Delineation Manual)

Project/Site: Big Spring Creek Applicant/Owner: Montana Department of Tr	ensportati	on.	Pr	oject No: Task 2	County: Fo		
Investigators: Trader / Berglund					State: M Plot ID: 2	ontane	
Do Normal Circumstances exist on the site?		~	es) No	Community ID:	EM		
is the site significantly disturbed (Atypical Si			Ma (No)	Transact ID:	NA.		- 1
is the area a potential Problem Area?	423000 277	-	~ ~~	Field Location:			
(If needed, explain on the reverse side)			a (100)		NE partian of site		
VEGETATION		USFWS R	egion No. 1	9)			
Dominant Plant Species(Latin/Common)				eles(Latin/Comm	non)		Indicator
Typhe latifolia	Herb	OBL		m lapathifolium		Herb	FACW+
Cuttuil, Broad-Leaf			Willow-W	eed		1	
Agrostis alba	Herb	FACW	Juneus ar			Herb	OBL
Redtop			Rush, Join				
Alapecurus pretensis	Herb	FACW	Juncus er	*****		Herb	FACW
Foxtal, Mesdow				H-Stamen			
Bidens cernue	Herb	FACW+		los crusgetti		Herb	FACW
Beggsr-Ticks, Nodding			Grass,Ba			1	
Epilobium cilistum	Herb	FACV/-	Glyceria e			Herb	FACW+
Willow-Herb, Hairy			Grass, Tel				
Eleocheris pelustris	Herb	OBL	Juneus to			Herb	FACW
Spikerush, Creeping			Rush, Ton				
Rumex crispus	Herb	FACW	Plantago			Herb	FAC+
Dock Curty			Plantain, C				
Corex aquablis	Herb	OBL	Salix exig			Shrub	OBT
Sedge, Water			Willow, Se				
Percent of Dominant Species that are OBL, (excluding FAC-) 16/16 = 100.00%	FACW or	FAC:			= 100.00% 16 = 1.75		
Remarks: Salk souttered.							
HYDROLOGY				<del></del>			
YES Recorded Dala(Describe in Remarks	il:	Wet	land Hydro	ology Indicators	***		1
NO Stream, Lake or Tide Gauge	•		Primary In				
YES Aerial Photographs		1		nundated			
NO Other		- 1		Saturated in Uppe	of 12 inches		- 1
NO No Recorded Data		1	NOV	Vater Marks			
NO RECOLEGE DAYS		1	NO.	offt Lines			1
Field Observations			YES	Fediment Deposit Vrainage Patterns			l
Depth of Surface Water:	= 3 (in.)		NO		annels in Upper 12	Inches	
Depth to Free Water in Pit:	N/A (in.)	1		Valer-Stained Le: .ocal Soil Survey			
Dopth to Salurated Soll:	N/A (in.)		YES	AC-Neutral Test Other(Explain in 8			



### DATA FORM **ROUTINE WETLAND**

			1987 COE Wet	iands Delineatio	n Manuai)	
Project/Si Applicant/ Investigat	Owner: Morter	ring Creek na Departmeni o r / Borglund	of Transportation	Proje	ct No: Task 29	Date: 29-Aug-2001 County: Fergus State: Montana Plot ID: 2
SOILS						
Map Symi	y (Subgroup): F	alnage Class:		1	Mapped Hydric I Observations Co	inclusion? onfirm Mapped Type? (Yes) No
Depth (inches)		Matrix Color Aunseil Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contr	Tertura (	Concretions, Structure, etc
10	B (M	10YR3/1	N/A	N/A N/A		
Remarks	4-00-2	Isture Regime	Colors	NO Listed on I	reaking in Sand Local Hydric Soll National Hydric S Iain in Remarks	Rs List Soils List
WETLAND	DETERMINAT	ION				
Wettand H	c Vegetation Pro tydrology Present ils Present?		No	is the Sampling Po	int within the We	etland? (fes) No
Remarks: Plot taken a		ry fill slope in NE	corner of site. This a	area is developing rapi	ofly into a flunctions	al wortland.

Page 1 of 2

Spring-fed; obvious groundwater connection.

Page 2 of 2

was em

### DATA FORM **ROUTINE WETLAND**

(1987 COE Wetlands Delineation Manual)

Do Normal Circumstances exist on the site? is the site significantly disturbed (Atypical Situs is the area a potential Problem Area? (If needed, explain on the reverse side)  VEGETATION  Dominant Plant Species(Latin/Common)  Crisium arvense  Thistle, Creeping  Equisetum arvense  Horsetall, Field  Phieum pratense  Timothy  Trifolium fragiferum  Clover, Strawberry  Agrostis elba  Redtop	{!	USFWS F	Sonchus e Sowthistle Bromus in Brome, sn Alopecuru Foxtell, Me	Transect ID: NA Fleld Location: W. of stream, S. of Par  \$) scies{Latin/Common} arvensis e, Fleld nearmis mooth us pratensis	sitional		Indicat FACU
Dominant Plant Species(Latin/Common) Crisium arvense Tristle,Creeping Equisetum arvense Horsetail, Field Phileum pratense Timothy Trifolium fragiferum Clover,Strawberry Agrostis alba	Stratum Herb Herb Herb	FACU+ FACU	Sonchus e Sowthistle Brome in Brome, sn Alopecuru Foxtell, Me	acces(Latin/Common) arvensis e. Field nermis mooth us pratensis		Herb	FACU
Cirsium arvense Thistle,Creeping Equisetum arvense Horsetail,Field Phleum pratense Timothy Trifolium fragiferum Clover,Strawberty Agrostis alba	Herb Herb Herb	FACU FACU	Sonchus e Sowthistle Bromus in Brome, sn Alopecuru Foxtell, Me	arvensis e.Field nermis mooth us pratensis		Herb	FACU
Tristle, Creeping Equisetum arvense Horsetall, Field Phleum pratense Timothy Trifolium fragiferum Clover, Strawberry Agrostis alba	Herb Herb Herb	FACU	Sowthistle Bromus in Brome, sn Alopecuru Foxtell, Me	e, Field nermis mooth us pratensis		1	
Equisetum arvense Horsetail, Field Phleum pratense Timothy Trifolium *regiferum Clover, Strawberry Agrostis alba	Herb Herb	FACU	Bromus in Brome, sn Alopecuru Foxteli, Me	nermis mooth us pratensis		Herb	NI
Horsetail, Field Phieum pratense Timothy Trifolium fragiferum Clover, Strawberry Agrostis alba	Herb Herb	FACU	Brome, sn Alopecuru Foxtali,Me	mooth us pratensis		Herb	INU
Phieum pratense Timothy Trifolium tragiferum Clover, Strawberty Agrostis alba	Herb		Alopecuru Foxtali,Me	us pratensis			1
Timothy Trifolium tragiferum Clover Strawberty Agrostis alba	Herb		Foxtali,Me				L
Trifolium fragiferum Clover,Strawberty Agrostis alba	1	FACU		an day.		Herb	FACW
Clover, Strawberry Agrostis alba	1	FACU		BROOM			
Agrostis alba	Herb		Trifolium I			Herb	FACU
Agrostis alba	Herb		Clover, Wr	nite			L
	I I COLD	FACW					
	1	l				<u> </u>	L
	1						
	1	1				1	L
	<del> </del>	<del> </del>	+			1	
	1	1				1	
Percent of Dominant Species that are OBL, F (excluding FAC-) 3/8 = 37.50%	FACW or	FAC:		Neutral: $2/7 = 28.5$ ric index: $27/8 = 3$			
Remarks: Does not satisfy hydrophytic vegetation criteria yet, HYDROLOGY	but appea	rs to be tra	ansitioning in t	that direction.			
NO Recorded Data(Describe in Remarks)	):	W	etland Hydr	ology indicators			
N/A Stream, Lake or Tide Gauge	,		Primary Ir				
N/A Aerial Photographs				Inundated			
N/A Other		- 1		Saturated in Upper 12 in	nches		
				Water Marks			
YES No Recorded Data		- 1		Drift Lines			
		- 1		Sediment Deposits			
Field Observations				Drainage Patterns in Wi	etlands		
				ry Indicators			
Depth of Surface Water:	N/A (in.)			Oxidized Root Channels	s in Upper 12	Inches	
Depth to Free Water in Pit:	N/A (in.)			Water-Stained Leaves			
Deput to Free Trace of Fig.	14.0			Local Soil Survey Data			
Depth to Saturated Soil:	= 10 (in.)			FAC-Neutral Test Other(Explain in Remark	ks)		

Page 1 of 2

WelForm<sup>Int</sup>



### DATA FORM ROUTINE WETLAND

(1987 COE Wetlands Delineation Manual)

Project/Site:	Big Spring Creek	Project No: Task 29		29-Aug-2001
Applicant/Owner:	Montana Department of Transportation		County:	Fergus
	Traxler / Berglund		State:	Montana
	34.074.0943.0979.38403334		Plot ID:	3

Map Unit Map Symi		es and Phase): Drainage Class:	Erber-Nesda loam:	s, 0-2% stop		ed Hydric Inclu	ision?		-
	y (Subgroup	); Cumulic Haplob				rvations Confi		ed Type?	(Yes) No
Depth (inches)	Hortzon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)		ttle e/Contrast	Texture, Cond	retions,	Structure,	etc
10	8	10YR3/2	10YR4/6	Few	Fairt	Sit loam			
Hydric So	NO Sulfic NO Aquic NO Redu	sol Epipedon	Colors	NO Hig NO Org NO Lis NO Lis	panic Streak ted on Local ted on Natio	ontent in Surfa ing in Sandy So I Hydric Solis Li nai Hydric Solis in Remarks)	ollis st	in Sandy S	Solls

	Water Street,	and the same of th	
WETLAND DETERMINATION			
Hydrophytic Vegetation Present?	Yes (No)	Is the Sampling Point within the Wetland?	Yes (No)
Wetland Hydrology Present?	(Yes) No	t	
Hydric Solls Present?	(Yes) No		
Remarks:			

Plot take in inside bend of creek, south of parking lot. This area is currently technically upland, but will likely develop a prevalence of hydrophytic vegetation, based on hydrology and soils. Area is considered transitional.

Page 2 of 2 Well-orrain



	artment of Transportation gation Monitoring Project for	Project Name Project/task number Date	Big Spring C 29 8/29/2001
Land an	d Water Consulting	Field Personnel	MT
Dane un	o water community	Note	
	2001	Rhithron Sample Identification	18
Coelenterata		Hydra	42
Oligochaeta	Enchytraeidae	Enchytraeidae	
	Naididae	Chaetogaster Naia alimania	6
		Nais elinguis Nais variabilis	6
		Ophidonais serpentina	v
	Tubificidae	Tubificidae - immature	
		Limnodrilus hoffmeisteri	
Hirudinea	Erpobdellidae	Mooreobdella microstoma	
		Nephelopsis	
	Glossiphoniidae	Helobdella stagnalis	
		Helobdella	
Disabile.	S-1	Glossiphonia	
Bivalvia Gastropoda	Sphacriidae Lymnaeidae	Sphaerium Fossaria	36
Gastropoda	Physidae		19
	Planorbidae	•	5
		Helisoma	
Crustacea	Cladocera	Cladocera	6
	Copepoda	Calanoida	
		Cyclopoida	5
		Ostracoda	2
	Amphipoda	Gammarus	00
	Danmada	Hyalella azteca	90
Acarina	Decapoda	Orconectes Acari	
Odonata	Aeshnidae	Anax	1
Cochata		Libellulidae-early instar	•
		Sympetrum	
	Coenagrionidae	Coenagrionidae-early instar	3
		Enallagma	
	Lestidae		
Ephemeroptera	Baetidae	Callibaetis	8
	Caenidae		
Hemiptera	Corixidae	Corixidae - immature	
		Hesperocorixa	
		Sigara Trichocorixa	
	Nepidae	Ranatra	
	Notonectidae		
Trichoptera	Hydroptilidae	Hydroptilidae - pupa	
ALC POPUL DO POLICIO A		Leptoceridae - early instar	
		Mystacides	
		Ylodes	
Coleoptera	Chrysomelidae	Chrysomelidae	
	Curculionidae	_	
	Dytiscidae	Hydroporinae - early instar larvae	
		Hygrotus	
		Liodessus	
		Laccophilus	
		Neoporus	
	Elmidae	: Heterlimnius	
	Haliplidae		6
		Peltodytes	
	Hydrophilidae		
		Helophorus	
		Hydrobius Hydrochara	
		Hydrochara Laccobius	
		Tropistermus	
Diptera	Ceratopogoninae	Bezzia/Palpomyia	4
•		Dasyhelea	9
		0	

Chaoboridae	Chaoborus	2
Culicidae	Anopheles	
	Culex	
	Ephydridae	
Simuliidae		
*	Sciomyzidae	
Stratiomyidae Chironomidae		3
Chironolindae	Chironomus	3
	Cladotanytarsus	
	Corynoneura	
	Cryptotendipes	
	Dicrotendipes	
	Einfeldia	
	Endochironomus	
	Labrundinia	
	Microtendipes	
	Orthocladius annectens	
	Parachironomus Paramerina	
	Paratanytarsus	
	Phaenopsectra	
	Polypedilum	
	Procladius	
	Psectrocladius	
	Psectrotanypus	
	Pseudochironomus	1
	Tanypus	
	Tanytarsus	
	TOTAL	254 7
	Total taxa	19
	POET	4
	Chironomidae taxa	2
	Crustacea taxa + Mollusca taxa	4
	% Chironomidae	1.57480315
	Orthocladiinae/Chironomidae	75
	%Amphipoda %Crustacea + %Mollusca	35.4330709 59.0551181
	HBI	7.48031496
	%Dominant taxon	35.4330709
	%Collector-Gatherers	70.4724409
	%Filterers	2.36220472
	T-4-14	2
	Total taxa POET	3
	Chironomidae taxa	3
	Crustacea taxa + Mollusca taxa	5
	% Chironomidae	3
	Orthocladiinae/Chironomidae	3
	%Amphipoda	1
	%Crustacea + %Mollusca	1
	HBI	3
	%Dominant taxon	3
	%Collector-Gatherers	3
	%Filterers	1
		22

site score

32

# **Appendix C**

# REPRESENTATIVE PHOTOGRAPHS

MDT Wetland Mitigation Monitoring Big Spring Creek Lewistown, Montana







Photo Point 1: 346 degrees North New Big Spring Creek channel

Photo Point 1: 300 degrees NW





Photo Point 1: 260 degrees West New Big Spring Creek channel

Photo Point 2: 155 degrees SE Location of old creek channel parallel to highway





Photo Point 3: 190 degrees SW

Photo Point 3: 340 Degrees North



Photo Point 4: 15 degrees NE From center of walkway – 6 feet from west bridge end



Photo Point 4: 200 degrees SW From center of walkway – 6 feet from west bridge end



Photo Point 5: 10 Degrees North Photo looking North towards foot bridge



Photo Point 5: 100 degrees East



Vegetation Transect start: 94 degrees East



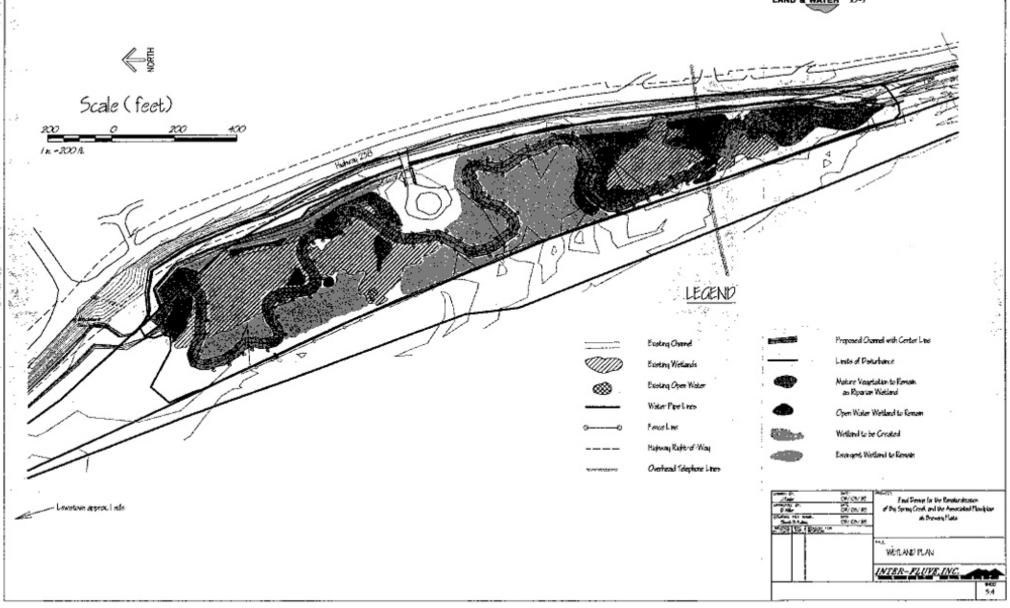
Vegetation Transect End: 274 degrees West

# **Appendix D**

# CONCEPTUAL SITE LAYOUT COMPLETED PRE-PROJECT FUNCTIONAL ASSESSMENT FORM

MDT Wetland Mitigation Monitoring Big Spring Creek Lewistown, Montana





PORTION OF THE WETTANDS WITHIN THE AA IS DUE TO ME LEAKING WHTER LINES WHICH HAVE SINCE BEEN ABANDONED OR REPAIRED. 316 SPEING CREEK WAS CHANNELIZED THROUGH 1. V ABOUT 1907 FOR THE SITE EXTEUR THAT HAS D WE RAILROAD PURPOSES. OVER THE INTERVENING YEARS, THE CHANNEL DOWNCUT BREWERY PLATS FLOODPLAN. THE AA WIN 175 NO LOUGER FUNCTIONALLY CONNECTED 15 BY WILLAUD AREA AREAS SEPARATED SOMEWHAT FRAGMENTED IN THAT THE WERTHO

ALL ICH LAST GEM BIG SPENG CREEK

# SECTION PERTAINING to FUNCTIONS & VALUES ASSESSMENT

AA. Habitat for F AA is Docume Regular use o Occasional (in Incidental (cha No use	ented (D or is desi	) or Suspect gnated crit it, sporadic	ted (S) to cal habita ) use (list	o receive (d at (list spe t species)	cies) D	: S _ S _	BALD S				mals:	CON		
Highest Level Us	se:	doc./reg.	doc	./occ.	sus./reg.		sus./oc	ю.	doc./inc	id.	sus./in	icid.	Non	е
Rating		High	High	h	Moderat	e	Modera	ate	Low		Low		Non	е
Functional Points	s	1.0	0.8		0.7		0.6		0.2		0.1		0.0	
Sources for docum			ervations, rec	cords, etc.)_ ://9/6	MEMC.		OM DICATE		CIDENTA				E COOR BUTH	DINATED)
THESE SPE	CIES.			, , , , , , , , , , , , , , , , , , , ,										
15B. Habitat for AA is Docume Regular use ( Occasional (in Incidental (ch No use	ented (D Ilist spe nfreguer	) or Suspe cies) nt, sporadio	cted (S) to	o receive ( t species)	c:rcte one) D D	s - s - s -	a Natura	I Herita	ge Progi	ram: (no	ot including	species	listed in 1	5A accve)
Highest Level Us	se:	doc./reg.	doc	:./occ.	sus./reg		sus./od	cc.	doc./inc	id.	sus./ir	ncid.	Nor	ie
Rating		High	Hig	h	Moderat	e	Moder	ate	Low		Low		(Nor	ie
Functional Point	s	1.0	0.8		0.7		0.6		0.2		0.1		0.0	$\geq$
Sources for docur	mented					TABA		EARCH	WAS		FOR ME		5:75.	
MTNHP 5	2 741	5 5175.	No	SPECIES	0 F	Caric	=4	₩ <u></u>	13517	ريت ١٠٠٠	700	7#15	211-	
Aquatic/semi a Non-aquatic re Amphibians (li Invertebrates ( i. Assessed ≥3 s's or ≥5 1-2 s's or 2-4 No s's and < Score is: (i	eptiles (liss examo (liss examo Wildlife is m's + s 4 m's 2 m's	t ex.) les) nples) Use (circle	,	V)or S S. Vor S S.	M. or N M. or N M. or N M. or N			at Diver exceptio e rating	sity from		s.	pints)		
-	ore			21	14	9	7		6	3	2		1	
Ra	ating			High	High	High	Hig	h (	Mod.	Mod.	Lo	w	Low	
Fu	ınctional	Points		1.0	0.9	0.8	0.7	·	0.5	0.4	0.	DECEMBER OF THE OWNER,	0.1	-
Comments: 2			3:4043		UCKS,	AND			E - TAIL		BSERV. DEER	ED :		INTHIN
SITE VISIT	0.5	VIDENCE DUED	D ./	BEAVER SIT THE	SITE	CCS	+SICNA	UYIA	ERSUNAL	COMM	الم الله	TOM S	TUEES	- FWP, WILL
15D. General Flake], circle NA her i. AA is ver for portions Native fish Introduced Controduced in No fish Score is: (i	rish Hall re and pro- rified (V s of thei game fis non-gam	oitat Rating oced to the or suspect r life cycle h ( he fish	g: (If AA donext function (S) to (circle p) V or S) V or S V or S	oes not cont ion) o support ioints)	tain, or is no	ot conn oups	ected to, ii. Surfa Perman Season Témpor	ice wate ent/pere al/intern	er in AA i ennial nittent	is (circ	le point ots) ots	ater bod	y (e.g. p	and ar <i>Biol</i> ai
Score		1	15	10	9	(	)	5	3.4		2	1		
-	ting		High	High	High	1	Mod.	Mod.	Мо	d.	Low	Lov	v .	
<b></b>	nctional	Points	(1.0)	0.9	0.8		0.7	0.6	0.5		0.2	0.1		
Comments				H" RATIN	IG ANI	2 4	WC 770A		CORE .		1.0 /	5 45	SIGNED	BASED CAME FIS
CN BIG 5	PRING	CREEK	BEWG	A PER	NNELIZE		EACH		VATIVE BUGH B		AND FL	wan-n 475	PROUIL	GAME FIS DES LIMITE
IT SHOULD		7. <u>C13701</u> 2)14 UT 3			DC1775S	AU:				700L		ITAT		

LAND & WATER D-4

ic flood ed wetled ed wetled led we	acreage of jurisdictions AA that is subject to ding (circle points) lands ≥ 10 acres = 7 land <10 ac.,>2ac.=5 etlands ≤ 2ac. = 1 is: ([i 1] x [ii 2]	as > pts. 25 pts. <2	Estimated ( forested ( 75% fo/s -75% fo/s 25% fo/ss	1 % of flo fo), scrub s ss	oded we -shrub ( = =		ssified	III. A		s no outlet s unrestric			tlet = =	O pts.
	Score	22	16-21	14-15	11	8-10	0 6-	-7	5-4	3	2	1		
	Rating	High	High	High	Higi	Med	d. M	lod.	Mod.	Low	Low	Lo	w	
	Functional Points	1.0	0.9	0.8	0.7	0.5	0.	.5	0.4	(0.3)	0.2	0.	1	
	rents: <u>WAILE THE</u>	EXISTAN	6 WERA	NOS 2	CAN		S.MALC			DUE TO				NO STON
i. i. v.	iment/Nutrient/Tox AA ( indu or or load Evid AA ( F Perc per of Category: (i) is Rat	xicant Re receives d striat/mun ther signs is to AA. dence of flo contains re cent cover s true and ling is nei	irect dischicipal was of eutrophoding or pestricted or of emerged at least ther High	and Reriarge of natewater) incation ponding of the total and/of two of the total and the two of the two long	moval: nanaged or accum resent) of occurs in o outlet : r dense ! ii), (iii),	water (moulation of immediant that woody veor (iv) ar	Tue []] or sunicipal of sedimer ate upstrufflow is slogetation in the true	or road of nt/excess ream lar owed or in the A = Higg = Mod	stormwates nutriented use poor retarded A exceed h Rating derate R	er, agricul ts evident tential to d :: :s 50%	tural draii (deposit	nage. s on ve	getatio	n, algai ma
	(I) is	s false ar	nd at leas	it two of	(ii), (iii)	or (iv) a	are false	-	NA NA					
		Rating				High	М	od.	Low					
		Function	onal Poin	its		1.0	0.	.5	(0.1)					
Fo.e Cure, i Sedin ige, or coly, cir . Estim		RATING CC SELL WSART abilization standing weed to nex	on: (applier tody attended to the compared today attended today)	455/G ANIST HANIST es only if which has in item	AA occurs a max s I-iv be	rs on or vimum decilow, circo	within the oth excee	e banks eding 6.6 e) er body	or a river of ft. at low	stream, o	or other ng. subject	ags 50 natural o	or man-	
Fc.2 Cur2, Sedinge, or response to the sedinger of the sedinge	TRANSART  RENTLY NO TR  ment/Shoreline State on the shoreline of a state on the shoreline of the shoreline on the shoreline on the shoreline of the shoreline of the shoreline on the shoreline of the shoreline of the shoreline on the shoreline of the shoreline of the shoreline on the shoreline of the shoreli	RATING OC SEI WISADET  Abilizatio standing weed to nex ted vegeti = = = =	on: (appliivater body of function; ated compared	459/6 AUTE AUVISA es only if which ha in item ponent i	AA occurs a max s I-iv be	TO CICAL TO CICAL Ins on or cimum deci- low, circ	within the oth exceed the choic ii. Wate Perman	e banks eding 6.6 e) er body ent/Pe al/ Inte	or a river of ft. at lov	stream, over the control of the cont	or other ng. subjected veg 5 pc 3 pc	agetatio	or man-	made
Fc.2 Cur2, Sedinge, or response to the sedinger of the sedinge	ment/Shoreline Standard Months and proceed to the shoreline of a standard material months and proceed to the short of the	RATING OC SEI WISADET  Abilizatio standing weed to nex ted vegeti = = = =	on: (appliivater body of function; ated compared	455/6 ANUTE/ MANIS ME es only if which ha in item ponent in oints oints oints	AA occius a max s I-iv be	TO CICAL TO CICAL Ins on or cimum deci- low, circ	within the oth exceede choic ii. Wate Perman Season	e banks eding 6.6 e) er body ent/Pe al/ Inte	or a river of ft. at lov	stream, over the recommendation of the recom	or other ng. subjected veg 5 pc 3 pc	natural oct to wa	or man-	made
Fc.2 Cur2, Sedinge, or response to the sedinger of the sedinge	ment/Shoreline State on the shoreline of a strole NA here and procented % cover of rooted vegetation rooted vegetation is: (i) x (ii)	RATING OC SEI WISADET  Abilizatio standing weed to nex ted vegeti = = = =	Ormers on: (applied attention) attention; attention; attention; 3 p 2 p 1 p	455/6  ANUTE/ MANISH es only if which ha in item ponent in oints oints oint  1	AA occius a max s I-iv be	rs on or vinum dec	within the oth excee the choic ii. Wate Perman Season Tempor	e banks eding 6.6 e) er body ent/Pe al/ Inter	or a river of ft. at lov adjace rennial rmittent hemeral	stream, over the recommendation of the recom	or other ng. subjected veg 5 p. 2 p.	natural oct to war getation oints cints	or man- ove action	made
Score	ment/Shoreline Stand Procession the shoreline of a stroke NA here and procession at ed. A cover of rooted vegetation footed vegetation is: (i) x (ii) Score  Rating  Functional Points	RATING OC SEL  MUSADET  abilitation standing weed to nex ted veget  =  =  =  ) =	on: (appliinater body st function, ated compared to provide the compared to pr	455/G  ANUTE/ MANISH es only if which ha in item ponent if oints oints oints oint  1 gh  1	AA occurs a max s I-iv be n AA	rs on or vinum decilow, circo	within the oth exceed choic ii. Wate Perman Season Tempor	e banks eding 6.6 e) er body ent/Pe al/ Inte ary/Ep	or a river of ft. at lov radjace rennial rmittent hemeral	stream, over the very water (e.g., or to room) and to room and	or other ng. subjected veg 5 p. 2 p. 3	natural det to was getation oints cints cints	or man- eve action	made on). If doe
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# FUNCTION & VALUE SUMMARY & OVERALL RATING

Function & Value Variables	Rating	Actual Functional Points	Possible Function al Points	Functional Units; (Actual Points x Estimated AA Acreage)
Listed/Proposed/Candidate T&E Species Habitat	Low	0.2	1 .	0.2 x 14.17 ac. = 2.8
MT Natural Heritage Program Species Habitat	NONE	0.0	1	0.0 x 14.17 ac = 0.0
C. General Wildlife Habitat	MO DERATE	0.5	1	0.5 × 14.17ac. = 7.1
D. General Fish/Aquatic Habitat	HIGH	1.0	1	1.0 x 14.17ac. = 14.2
E. Flood Attenuation and Storage	LOW	0.3	î	0.3 x 14.17 ac. = 4.3
F. Sediment/Nutrient/Toxicant Removal	Low	C.1	1	0.1 x 14.17 ac. = 1.4
G. Sediment/Shoreline Stabilization	N/A	N/.4		
H. Production Export/Food Chain Support	LOW	C.4	1	C.4x 14.17 ac. = 5.7
Groundwater Discharge/Recharge	UNKVOWN	N/4	1	·
J. Uniqueness	LOW	0.2	1	0.2 × 14.17 ac. = 2.8
K. Recreation/Education Potential	HIGH	1.0	1	1.0 x 14.17 ac. = 14.2
L. Dynamic Surface Water Storage				
Totals:		3.7	10.0	52.4

OVERALL ANALYSIS AREA (AA) RATING: (Circle appropriate category based on the criteria outlined below) I II III (IV)						
Score of 0.9 or 1 functional point for Uniqueness or "High" rating for Uniqueness and Condition (#12) is "Undisturbed"; or Score of 1 functional point for Flood Attenuation and Storage and answer to Question 14.E.3 is "yes"; or Total actual functional points > 80% (round to nearest whole #) of total possible functional points.						
Category II Wetland: (Criteria for Category I not satisfied but meets any one of the following criteria; if not satisfied, go to Cat. IV)  Score of 1 functional point for Species Rated S1, S2, or S3 by the MT Natural Heritage Program; or  Score of 1 functional point for General Wildlife Habitat; or  "High" ratings for both General Wildlife Habitat and General Fish/Aquatic Habitat; or  "High" rating for Uniqueness or  Total Actual Functional Points > 65% (round to nearest whole #) of total possible functional points.						
Category III Wetland: (Criteria for Categories I, II or IV not satisfied: if doe not meet criteria go to Category IV)	2					
Category IV Wetland: (Criteria for Categories I or II are not satisfied and any one of the following criteria; if does not satisfy criteria go to Category III)  —————————————————————————————————	ia					

# Appendix E

BIRD SURVEY PROTOCOL
MACROINVERTEBRATE SAMPLING PROTOCOL
GPS PROTOCOL

MDT Wetland Mitigation Monitoring Big Spring Creek Lewistown, Montana



## **BIRD SURVEY PROTOCOL**

The following is an outline of the MDT Wetland Mitigation Site Monitoring Bird Survey Protocol. Though each site is vastly different, the bird survey data collection methods must be standardized to a certain degree to increase repeatability. An Area Search within a restricted time frame will be used to collect the following data: a bird species list, density, behavior, and habitat-type use. There will be some decisions that team members must make to fit the protocol to their particular site. Each of the following sections and the desired result describes the protocol established to reflect bird species use over time.

# **Species Use within the Mitigation Wetland: Survey Method**

Result: To conduct a bird survey of the wetland mitigation site within a restricted period of time and the budget allotment.

### Sites that can be circumambulated or walked throughout.

These types of sites will include ponds, enhanced historic river channels, wet meadows, and any area that can be surveyed from the entirety of its perimeter or walked throughout. If the wetland is not uncomfortably inundated, conduct several "meandering" transects through the site in an orderly fashion (record the number and approximate location/direction of the transects in the field notebook; they do not have to be formalized or staked). If a very small portion of the site cannot be crossed due to inundation, this method will also apply. Though the sizes of the site vary, each site will require surveying to the fullest extent possible within a set time limit. The optimum times to conduct the survey are in the morning hours. Conduct the survey from sunrise to no later than 11:00 AM. (Note: some sites may have to be surveyed in the late afternoon or evening due to time constraints or weather; if this is the case, record the time of day and include this information in your report discussion.) If the survey is completed before 11:00 AM and no additions are being made to the list, then the task is complete. The overall limiting factor regarding the number of hours that are spent conducting this survey is the number of budgeted hours; this determination must be made by site by each individual.

In many cases, binoculars will be the only instrument that is needed to identify and count the birds using the wetland. If the wetland includes deep water habitat that can not be assessed with binoculars, then a scope and tripod are necessary. If this is the case, establish as many lookout posts as necessary from key vantage points to collect the data. Depending on the size of the open water, more time may be spent viewing the mitigation area from these vantage points than is spent walking the peripheries of more shallow-water wetlands.

### Sites that cannot be circumambulated.

These types of sites will include large-bodied waters, such as reservoirs, particularly those with deep water habitat (>6 ft) close to the shore and no wetland development in that area of the shoreline. If one area of the reservoir was graded in such a way to create or enhance the development of a wetland, then that will be the area in which the ambulatory bird survey is conducted. The team member must then determine the length of the shoreline that will be surveyed during each visit.



As stated above in the ambulatory site section, these large sites most likely will have to be surveyed from established vantage points.

# Species Use within the Mitigation Wetland: Data Recording

Result: A complete list of bird species using the site, an estimate of bird densities and associated behaviors, and identification of habitat use.

# 1. Bird Species List

Record the bird species on the Bird Survey - Field Data Sheet using the appropriate 4-letter code of the common name. The coding uses the first two letters of the first two words of the birds' common name or if one name, the first four (4) letters. For example, mourning dove is coded MODO and mallard is MALL. If an unknown individual is observed, use the following protocol and define your abbreviation at the bottom of the field data sheet: unknown shorebird: UNSB; unknown brown bird (UNBR); unknown warbler (UNWA); unknown waterfowl (UNWF). For a flyover of a flock of unknown species, use a term that describes the birds' general characteristics and include the approximate flock size in parentheses; do not fill in the habitat column. For example, a flock of black, medium-sized birds could be coded: UNBB / FO (25). You may also note on the data sheet if that particular individual is using a constructed nest box.

# 2. Bird Density

In the office, sum the Bird Survey – Field Data Sheet data by species and by behavior. Record this data in the Bird Summary Table.

### 3. Bird Behavior

Bird behavior must be identified by what is known. When a species is simply observed, the behavior that it is immediately exhibiting is what is recorded. Only behaviors that have discreet descriptive terms should be used. The following terms are recommended: breeding pair individual (BP); foraging (F); flyover (FO); loafing (L; e.g. sleeping, roosting, floating with head tucked under wing are loafing behaviors); and, nesting (N). If more behaviors are observed that do have a specific descriptive word, use them and we will add it to the protocol; descriptive words or phrases such as "migrating" or "living on site" are unknown behaviors.

## 4. Bird Species Habitat Use

We are interested in what bird species are using which particular habitat within the mitigation wetlands. This data is easily collected by simply recording what habitat the species was initially observed. Use the following broad category habitat classifications: aquatic bed (AB - rooted floating, floating-leaved, or submergent vegetation); forested (FO); marsh (MA – cattail, bulrush, emergent vegetation, etc. with surface water); open water (OW – primarily unvegetated); scrubshrub (SS); and upland buffer (UP); wet meadow (WM – sedges, rushes, grasses with little to no surface water). If other categories are observed onsite that are not suggested here, we will make a new category next year.



E-2

# AQUATIC INVERTEBRATE SAMPLING PROTOCOL

# **Equipment List**

- D-frame sampling net with 1 mm mesh. Wildco is a good source of these.
- Spare net.
- 1-liter plastic sample jars, wide-mouth. VWR has these: catalog #36319-707.
- 95% ethanol: Northwest Scientific in Billings carries this.

All these other things are generally available at hardware or sporting goods stores. Make the labels on an ink jet printer preferably.

- hip waders.
- pre-printed sample labels (printed on Rite-in-the-Rain or other coated paper, two labels per sample).
- pencil.
- plastic pail (3 or 5 gallon).
- large tea strainer or framed screen.
- towel.
- tape for affixing label to jar.
- cooler with ice for sample storage.

### Site Selection

Select the sampling site with these considerations in mind:

- Select a site accessible with hip waders. If substrates are too soft, lay a wide board down to walk on.
- Determine a location that is representative of the overall condition of the wetland.

# Sampling

Wetland invertebrates inhabit the substrate, the water column, the stems and leaves of aquatic vegetation, and the water surface. Your goal is to sweep the collecting net through each of these habitat types, and then to combine the resulting samples into the 1-liter sample jar.

Dip out about a gallon of water into the pail. Pour about a cup of ethanol into the sample jar. Fill out the top half of the sample labels, using pencil, since ink will dissolve in the ethanol.

Ideally, you can sample a swath of water column from near-shore outward to a depth of approximately 3 feet with a long sweep of the net, keeping the net at about half the depth of the water throughout the sweep. Sweep the water surface as well. Pull the net through a vegetated area, beneath the water surface, for at least a meter of distance.

Sample the substrate by pulling the net along the bottom, bumping it against the substrate several times as you pull.



This step is optional, but it gives you a chance to <u>see</u> that you've collected some invertebrates. Rinse the net out into the bucket, and look for insects, crustaceans, etc. If necessary, repeat the sampling process in a nearby location, and add the net contents to the bucket. Remember to sample all four environments.

Sieve the contents of the bucket through the straining device and pour or carefully scrape the contents of the strainer into the sample jar.

If you skip the bucket-and-sieve steps, simply lift handfuls of material out of the sampling net into the jars. In either case, please include some muck or mud and some vegetation in the jar. Often, you will have collected a large amount of vegetable material. If this is the case, lift out handfuls of material from the sieve into the jar, until the jar is about half full. Please limit material you include in the sample, so that there is only a single jar for each sample.

Top off the sample jar with enough ethanol to cover all the material in the jar. Leave as little headroom as possible.

It is not necessary to sample habitats in any specified order. Keep in mind that disturbing the habitats prior to sampling will chase off the animals you are trying to capture.

Complete the sample labels. Place one label inside the sample jar and tape the other label securely to the outside of the jar. Dry the jar before attaching the outer label if necessary. In some situations, it may be necessary to collect more than one sample at a site. If you take multiple samples from the same site, clearly indicate this by using individual sample numbers, along with the total number of samples collected at the site (e.g. Sample #3 of 5 total samples).

Photograph the sampled site.

# Sample Handling/Shipping

- In the field, keep collected samples cool by storing them in a cooler. Only a small amount of ice is necessary.
- Inventory all samples, preparing a list of all sites and enumerating all samples, before shipping or delivering to the laboratory.
- Deliver samples to Rhithron.



# **GPS Mapping and Aerial Photo Referencing Procedure**

The wetland boundaries, photograph location points and sampling locations were field located with mapping grade Trimble Geo III GPS units. The data was collected with a minimum of three positions per feature using Course/Acquisition code. The collected data was then transferred to a PC and differentially corrected to the nearest operating Community Base Station. The corrected data was then exported to ACAD drawings in Montana State Plain Coordinates NAD 83 international feet.

The GPS positions collected and processed had a 68% accuracy of 7 feet except in isolated areas of Tasks .008 and .011, where it went to 12 feet. This is within the 1 to 5 meter range listed as the expected accuracy of the mapping grade Trimble GPS.

Aerial reference points were used to position the aerial photographs. This positioning did not remove the distortion inherent in all photos; this imagery is to be used as a visual aide only. The located wetland boundaries were given a final review by the wetland biologist and adjustments were made if necessary.

Any relationship of features located to easement or property lines are not to be construed from these figures. These relationships can only be determined with a survey by a licensed surveyor.

